upplement to this day's issue.

"Step after step the ladder is ascended."—George Herbert, *Jacula Prudentum.*
"Agriculture is the most healthful, most useful, and most noble employment of man."—WASHINGTON.

THE TROPICAL AGRICULTURIST:

(ESTABLISHED 1881.)

A MONTHLY RECORD OF INFORMATION FOR PLANTERS

OF

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EDITED BY

J. FERGUSON,

of the "CEYLON OBSERVER," "CEYLON HANDBOOK AND DIRECTORY," *&c.*

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VOL. XX.

[Containing Numbers I. to XII.: July, 1900, to June, 1901.]

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1901.

TO OUR READERS.

In closing the Twentieth Volume of the "**Tropical Agriculturist**," we would as usual direct attention to the large amount of useful information afforded and to the great variety of topics treated in the several numbers. From month to month, we have endeavoured to embody in these pages the latest results of practical experience and scientific teaching in all that concerns tropical agriculture ; and our ambition has been to make this periodical not only indispensable to the planter, but of service to business-men and capitalists, never forgetting that agriculture trenches upon every department of human knowledge, besides being the basis of personal and communal wealth.

While directing our attention chiefly to the products prominently mentioned on our title-page, we have always taken care to notice minor industries likely to fit in with sub-tropical conditions ; and our readers have an ample guarantee in the index pages before them, that, in the future, no pains will be spared to bring together all available information both from the West and East, the same being examined in the light of the teachings of common sense as well as of prolonged tropical experience in this, the leading Crown and Planting Colony of the British Empire.

Special attention has, during the past year, been given to the introduction and extension of an industry in rubber-yielding trees (more especially in the planting of Para and Castilloa trees), and much literature on the subject will be found throughout our pages ; also on cacao in Central America and the West Indies as well as in Ceylon ; to "Spices" of various kinds (nutmegs, camphor, &c.) ; to palms, especially "coconuts" in different districts ; to coffee and allied products in Brazil, Mexico, Costa Rica, East Java, Nyassaland, British Central Africa ; Liberian coffee in Sumatra, Java, the Straits Settlements ; and to other new developments in palms and tobacco planting, &c., in the Malayan Peninsula, Sumatra and North Borneo, as well as in this Island.

The Tea-planting Industry has sprung into so much importance in India (South as well as North) and Ceylon, as also in Java, that a considerable amount of space is naturally given to this great staple ; and with reference to all Companies' Reports, to Sales and Prices, as well as to hints for economising, we think it will be admitted by impartial judges that the *Tropical Agriculturist* should be filed, for the convenience of planters, in every Tea Factory in this Island, in India and in Java.

A full and accurate Index affords the means of ready reference to every subject treated in this, the Twentieth Volume, which we now place in our subscribers' hands, in the full confidence that it will be received with an amount of approval, at least equal to that which has been so kindly extended to its predecessors.

To show how fully other Products besides Tea are treated in this volume, we may mention the number of entries under several headings as follows :—Coffee (including Liberian) 44 ; Cacao 28 ; Indiarubber 70 ; many to Gutta Percha ; to Coconuts and other Palms, Rice and other Grain, Cinchona, Camphor, Cloves, Fibres, Tobacco, Fruits and Miscellaneous Products nearly 1,000. In the 20 volumes, the references to Rubber, Cacao and Coffee number many thousands, as also to Coconuts and other Palms.

A "Topical Index" to the twenty volumes is in course of preparation.

We are convinced that no more suitable or useful addition can be made to a Planting Company's Library or gift to a tropical planter or agriculturist, whether he be about to enter on his career, or with many years of experience behind him, than the twenty volumes of our periodical which we have now made available. They are full of information bearing on every department and relating to nearly every product within the scope of sub-tropical industries.

In conclusion, we have to tender our thanks to readers and contributors, and our wish that all friends may continue to write instructively and to read with approval ; for then, indeed, must the "**Tropical Agriculturist**" continue to do well.

J. FERGUSON,

Colombo, Ceylon ; 5th July, 1901.

☞ **All Planters of New Products or Pioneers in new lands should not fail to order this periodical as their best instructor —Every Tea Factory, Coconuts or Cacao Store ought to have a file of the TROPICAL AGRICULTURIST, which contains a vast amount of information about Tea, and a Record of the Tea and other Produce Sales.**

The Portraits and Biographies of some more OLD COLONISTS AND PLANTING PIONEERS are likely to appear in the next Volume.

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....

....1901.

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I am, Sirs,

Yours faithfully,

....

To Messrs. A. M. & J. FERGUSON,

"CEYLON OBSERVER" OFFICE,

COLOMBO, CEYLON.

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WHAT IS THOUGHT OF

THE "TROPICAL AGRICULTURIST."

A gentleman resident in the Central Province, who has as good opportunities of knowing what is of benefit to Planters as anyone we know, sent us the following explicit testimony to the value of the "*T.A.*":—

"Since its commencement, I have regularly seen and perused the *Tropical Agriculturist*. There can be but one opinion that its scope and object are highly important, and that it supplies a distinct desideratum, which it is to the interest of every estate proprietor, to have available in the bungalow for the use of his *locum tenens*, or superintendent. As a magazine it provides varied and instructive fresh literature at intervals; deprived, as most in Ceylon are, of easy access to libraries; and as years go by it will growingly become 'The Ceylon Encyclopædia' with reference to agricultural operations. Viewing estate property as practically a permanent investment to any proprietor, the trifling charge of R12 per annum—a rupee a month—is certainly of no account, provided the separate numbers are kept and bound together yearly as a book of reference for the benefit of the manager and his successors. In that light, as the property of an estate to be handed over just as much as its office furniture, few proprietors would probably refuse to authorise its being taken and filed regularly (if the periodical was brought under their notice), more especially as on looking over the most recent volume one cannot fail to see how much valuable information on 'Tea' has been collated. In the belief that 'Tea' has restored prosperity to Ceylon, and that plantation property is a good investment for capitalists, such should not omit the office and connected equipment so advisable on all 'pucka' estates, a part of which should be the *Tropical Agriculturist*. I find I have gone on writing, but, as I am getting the numbers for the past year ready to be bound, the volume is before me."

THE VALUE OF THE "*T.A.*" TO CEYLON ESTATE OWNERS.—A planting correspondent wrote some time ago:—"I think proprietors should supply every tea estate with the *T.A.* The information in it with regard to everything in connection with tea, &c. is invaluable: it would pay its value over and over again. Owners of estates should not leave it to hard-up superintendents to take it in."

A Correspondent writes:—"I venture to say the volumes of the *Tropical Agriculturist* will be at a premium a few years hence: it is a book which is bound to rise in value as time rolls on, and subscribers will probably, if they so choose, be able to sell at a handsome profit, besides having had the benefit of using the information in the meantime."

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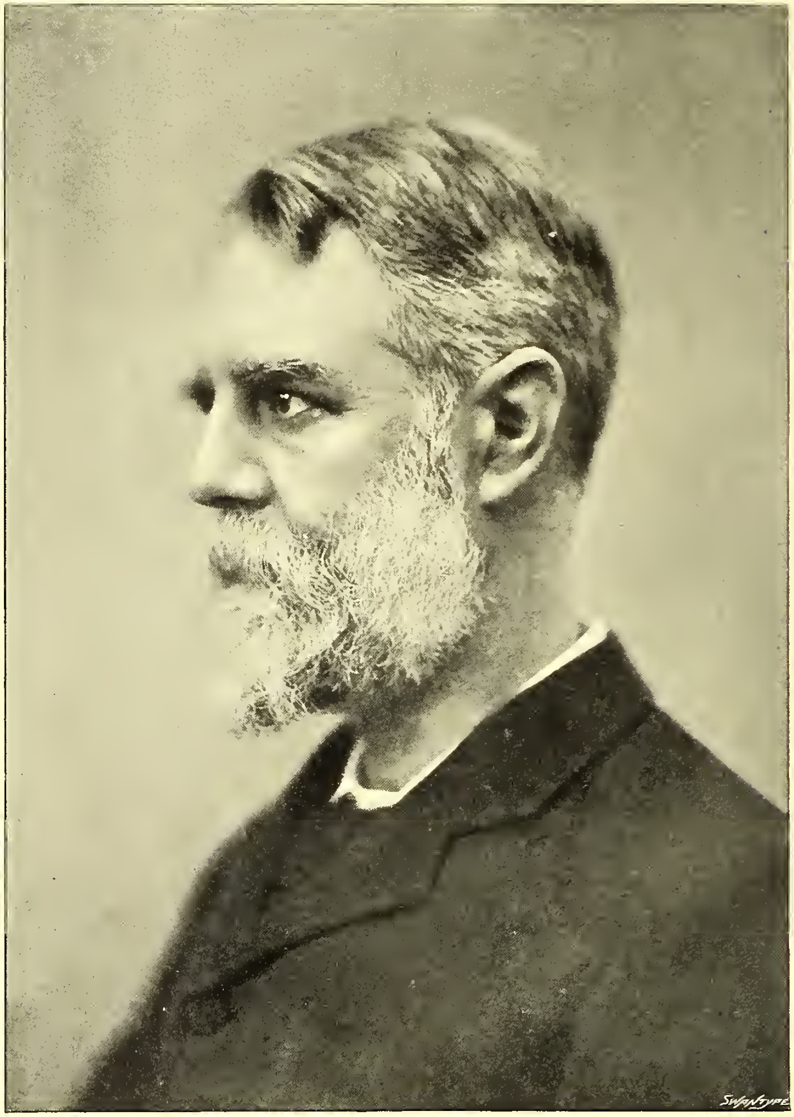
Sir W. T. Thistleton Dyer, F.R.S., F.L.S., C.M.G., of Kew Gardens:—"Sir Joseph Hooker and myself always look out for the successive numbers of the *T.A.* with eagerness, and I keep a file in my office for reference. It is impossible to speak too highly of the utility of such a publication and of the way it is managed."

Sir George King, late of the Calcutta Government Museum:—"I know your *Tropical Agriculturis* well, having carefully secured every number since the beginning. You have succeeded in making it a wonderfully useful magazine of information for planters."

Surgeon-Major Bidie, F.L.S., of the Government Central Museum, Madras:—I find the *Tropical Agricultrist* a most interesting and useful publication. It finds a place on the table of our Public Library and is much prized."



HENRY TRIMEN.

The TROPICAL AGRICULTURIST

MONTHLY.

Vol. XX. COLOMBO, JULY 2ND, 1900. No. 1.

"PIONEERS OF THE PLANTING ENTERPRISE IN CEYLON."

(Third Series.)

THE LATE HENRY TRIMEN, F.R.S., F.L.S., M.B., &C.

THERE can be no difference of opinion as to the claim of the late "Dr. Trimen"—to quote the title by which he was universally known and esteemed in Ceylon—to a place in the portrait gallery and biographical series of our *Tropical Agriculturist.* His predecessor, Dr. Thwaites, has already been duly noticed; but Dr. Trimen, while an equally accomplished scientist, did far more in the direction of economic botany in Ceylon, and it was his fortune to watch the decay of *Coffea Arabica* and to encourage the succeeding industries in Cinchona and Cacao, and above everything to do all in his power to promote the success of our present staple Tea. The Annual Reports on the Royal Botanic Gardens, for which he was responsible, were models of what such Reports should be, and especially were they full and practical in their treatment of new economic products as may be judged from the many extracts we have embodied in the Planting and Agricultural Review of our "Ceylon Handbook and Directory." He was also a frequent contributor to our monthly periodical, the convenience and usefulness of which he much prized, and he never failed to give a prompt reply to the many letters of enquiry as to plant troubles, or experimental culture, made to him by us on behalf of planters up and down, and even from beyond, the Island. A more obliging official, more attentive correspondent, or more pleasant friend and genial man than Dr. Trimen never came to Ceylon. Apart from our own personal experience, we are simply echoing the very high opinion entertained by such competent judges as the late A. M. Ferguson, C.M.G., and W. Ferguson, F.L.S.; which his subordinates—native as well as European—were deeply attached to him.

With so much by way of preface, we will now proceed to extract from the "Journal of Botany" for December, 1896, the brief but appreciative memoir written by the editor, Mr. James Britten, F.L.S., Senior Assistant Department of Botany, British Museum (Natural History) South Kensington. Dr. Trimen himself had been editor of this Botanical periodical at one time and it was very fitting therefore that justice should have been done to his career and memory in its pages, as follows:—

IN MEMORY OF HENRY TRIMEN.

(WITH PORTRAIT.*)

Henry Trimen was born on October 26th, 1843, a 3, Park Place Villas, Paddington, London. He was educated at King's College, London, firstly in the school and subsequently on the medical side of the College. Very early in life he showed a strong animals and plants with much ardour. His elder

* We are indebted for a supply of this portrait to the printers of the "Journal of Botany."

liking for natural history, and collected specimens of brother Roland was devoted to the same pursuits, and well remembers how, when it became a matter of necessity to make a choice among the "omnium gatherum" of organic objects amassed, it was solemnly decided that Henry should restrict himself to the study of plants, while his senior was to devote his attention to insects. Holidays and half-holidays were almost always occupied by collecting excursions in the environs of London; and school vacations, with the annual visit of the family to the seaside, gave golden opportunities for field-work which were never neglected. While he was still at King's College School he had begun to form an herbarium, and frequently visited the Botanical Department of the British Museum for the determination of his collections. He was than a steady and careful worker, and a careful observer of all the conditions of plant-life.

He began his medical studies at Kings's College in the autumn of 1860. The winter of 1864 he spent at Edinburgh University, where, besides attending to his medical studies, he acted as clinical assistant to Prof. Bennett. He joined the Edinburgh Botanical Society, and secured the friendship of Prof. Balfour and many of the younger botanists of Edinburgh. He graduated M.B. with honours at London University in 1865, and for a short time he acted as district medical officer in the Strand district during an epidemic of cholera.

It was in 1864 that I made Dr. Trimen's personal acquaintance. The Society of Amateur Botanists, which had been established in 1862 and of which some account will be found in this Journal for 1864, p. 287, was then in the best period of its not very long existence, and Mr. Newbould took me to one of the meetings and introduced me to Mr. Trimen and to Mr. Dyer—two names which were then, like their possessors, intimately associated. To a lad of eighteen, strange to public meetings and shy of strangers, these young men of twenty-one seemed superior beings—an impression intensified by a certain loftiness of tone which, in Trimen's case, soon disappeared upon more intimate acquaintance. Trimen and Dyer were the leading spirits of the Society, which, however, also numbered men who have distinguished themselves in botanical work during later life (of whom Mr. W. G. Smith is a conspicuous example), as well as others whose attachment to botany was but temporary.

At this period, and for many years after, Trimen took a prominent part in the work of the Botanical Exchange Club, and this brought him into frequent communication with Mr. J. G. Baker, which developed into personal friendship when the latter came to town in 1866. Somewhat later than this he formed the acquaintance of the Hon. J. Leicester Warren (afterwards Lord de Tabley), who, with Mr. Newbould and Mr. Dyer, were his chief botanical friends. With the last of these he projected in 1866—in which year he added *Wolffia arrhiza* to our British list—the *Flora of Middlesex*, which, on its publication in 1869, was at once recognized as an epoch-making book in the history of British botany, and has formed a model for subsequent compilers of local floras. It is unnecessary to speak at length of a book so well known and so deservedly admired. It has always been supposed that Dr. Trimen was responsible for the larger portion of the undertaking; and the interleaved copy of the *Flora*, which, on going to Ceylon, he left in the Department of Botany, is full of MS. notes which will interest future investigators of the plants of the county.

Although he had completed his medical course with distinction, it was manifest that Trimen's vocation lay in the direction of botany. He was well acquainted with Mr. Bennett and with Mr. Carruthers, the latter of whom had shown every encouragement to him and to Mr. Dyer at the beginning of their botanical career, and had thus contracted a warm personal friendsoip with them, which in Trimen's case was never broken. Mr. Dyer had also a desire for botanical work, and, as I have said elsewhere,* it was only after much deliberation that Trimen was chosen to fill the post of Assistant in the Department of Botany in the British Museum. It is curious to speculate on the turn that events might have taken had the choice been otherwise. In 1877 Trimen became botanical lecturer to St. Mary's Hospital—a post which he retained for many years.

Although it was not till 1870 that Trimen's name appeared on the little-page of this Journal in the capacity of assistant-editor, he had for some time had much to do in its management. During Seeman's frequent absences from England, Mr. Carruthers had acted as editor, although his name never appeared in that capacity; but from 1870 onwards Trimen was responsible in every way for the conduct of the Journal, although his name did not appear as editor until after Seemann's death in 1871. He at once reduced the price of the Journal and introduced many new features, the result being an increased circulation and a much improved table of contents. The pecuniary loss entailed, however, was considerable, although towards the end of his editorship the Journal paid its way. The Journal has from the first been unofficially associated with the British Museum. Dr. Seemann found the Botanical Department a convenient place of reference, and subsequent editors have been members of the Museum staff, so that, although the Museum is in no way responsible for what may appear in its pages, it has furnished a convenient medium—more needed, perhaps, formerly than at present—for keeping the botanical world *au courant* with what is done in the National Herbarium. Dr. Trimen, as a loyal servant of the Trustees, systematically recorded the progress of the collections, and the importance of the records thus published is shown by the fact that in

* *Journ. Bot.* 1895, 183.

such works as De Candolle's *La Phytographie*, this Journal is frequently cited as the source whence information regarding the Museum collections has been derived. Besides the work of editing, Dr. Trimen enriched the Journal with numerous communications dealing with British plants from various aspects, bibliographical and other matters, descriptions of new genera and species, reviews of books, and the like. His work throughout is characterized by extreme care. He did much to elucidate the British species of such critical genera as *Polygonum* and *Rumex*, and in the latter genus he commemorated his friend Mr. Warren by naming in his honour a form subsequently identified with *R. Knafii*.* He also contributed to the Linnean Society's Journal and to other periodicals; fifty papers stand under his name in the Royal Society's *Catalogue of Scientific Papers*.

In 1872-3 Trimen took a leading part in the promotion of certain reforms in the Linnean Society, of which body he had become a Fellow in 1866. The bringing about of these was attended by a period of excitement rare in the annals of a learned body. Some account of what took place may be found in the Journal for these years; and the result was in every way beneficial, although in the course of the proceedings necessary to secure reform, certain regrettable incidents occurred. Those who remember the formal meetings of pre-reformation days will agree that the contrast between then and now is nothing short of startling. It is to Trimen that we owe the small but important regulation by which the dates of publication of each part of the Journal are printed on the back of the title to each volume.

In 1875 began the publication of what was in some respects Trimen's most noteworthy work—*Medicinal Plants*—which he undertook in collaboration with Prof. Bentley. This was not concluded until 1880, the last part having been published in February of that year, after Trimen had left England for Peradeniya. This important change in his career occurred in December, 1879, to the great regret of his colleagues in the Museum.

This seems a fitting place in which to pay a tribute to those personal characteristics which made Trimen popular among a large circle of friends. Bright and cheerful in manner, with a sufficient sense of humour and a good acquaintance with general affairs and literature, be was an extremely pleasant companion; while as a Museum official he was always courteous and helpful to enquirers, and both ready and willing to impart the knowledge he possessed. "His kind-hearted and cheerful nature," writes his brother, "with his unflagging zeal and activity in the pursuit of his favourite science, won him many faithful friends and associates—espeeially when he held the post of Lecturer on Botany at St. Mary's Hospital, and led his class in the field no less ably and enthusiastically than he did in the lecture-room. I think that his life," he adds, "was, until quite lately, a very happy one. He was able to give himself unrestricted to the work he loved best, and in its practical application to the tropical gardens of which he was in charge for sixteen years was unquestionably most successful. He was free from family cares or pecuniary anxieties, and up till two years ago enjoyed unusually good health, while he had the happy gift of winning the affection and respect of all those with whom he had to do."

On his arrival in Ceylon, Trimen threw himself with characteristic energy into the various branches of his work. This involved an entire rearrangement of the Gardens—a task the need and execution of which are well set forth by M. Treub, of Buitenzorg, a highly competent judge in such matters. The Garden, he says, was "for many years under the direction of Dr. Thwaites, a man of real merit, but who thought a botanic garden in a tropical country should be in some manner a reduced copy of the virgin forest. This system, more original than meritorious, excludes any methodical arrangement of plants and necessarily restricts the number of specimens. Dr. Trimen, as soon as he arrived in Ceylon, realized the disadvantages of the plan of his predecessor. To distribute over an area of sixty hectares, without any order, a great number of plants, for the most part not labelled, was fatally to embarrass the scientific use of the rich collections that had been brought together. So Dr. Trimen did not hesitate to adopt a new arrangement of plants according to the natural system, and to label them as far as it was possible for him to do so. With branch establishments upon the plain and upon the mountain, the garden of Peradeniya has before it a brilliant future."*

His life in Ceylon was very pleasant, any feeling of isolation being greatly modified by the visits of other botanists, such as Dr. Marshall Ward and Mr. H. N. Ridley, or of other scientific men, such as Prof. Ernest Haeckel, who, in his *Visit to Ceylon*, speaks warmly of Trimen's genial hospitality and "valuable instruction"—"the seven days I spent in his delightful bungalow were indeed to me seven days of creation." In such company Trimen would take expeditions into parts of the island hitherto unexplored by him, never failing to discover some interesting novelties.

This is not the place in which to consider Trimen's services to economic botany; his annual reports show that he developed the resources of the Garden in every direction, and his contributions to quinology were important. But something must be said about his botanical work in Ceylon. As soon as he had settled down, he became conscious of the need of a flora of the island. In 1885 he issued a catalogue of the plants, with the vernacular names and references to Thwaites's *Enumeratio*; and in this Journal for the same year he published a series of notes on

* See *Journ. Bot.* 1896, 79.

* *Annual Report of Smithsonian Institution*, 1889-90, p. 390.

Ceylon plants, in which were included many novelties: a further list of additions will be found in the volume for 1889. During a visit to England in 1886, he went carefully through Hermann's Ceylon Herbarium, the basis of Linnæus's *Flora Zeylanica*, and published in the Linnean Society's Journal (vol. xxiv.) a list of the plants therein contained, with the modern equivalents of the Linnæan names. The short preface to this is an excellent example of Trimen's work, giving as it does a history of the herbarium, and general notes upon its contents.

These of course were but preliminaries to what was to have been the great work of his life—which alas! he was not destined to finish. In 1893 appeared the first volume of the *Handbook to the Flora of Ceylon*—a work which as I said when reviewing it in these pages,* occupies towards colonial floras a position similar to that which the *Flora of Middlesex* holds with regard to that of this country. To that review readers must refer for an account of the work. Had the author been spared, it was his intention, as soon as this large undertaking was completed, to compile from it a Handbook of Ceylon Plants, analogous to Babington's *Manual*.

But it will cause no surprise to those who saw him when he was home last year that Trimen was unable to complete his enterprise. He had for years suffered from deafness, and this had become total, so that he was only able to carry on conversation with the aid of a pencil and paper. One leg was then entirely paralyzed, and although in spite of these and other troubles he maintained his old cheerfulness of demeanour, it was very painful to his old friends to see the state to which he had been reduced. We had hoped that he would not go back to Ceylon, but there were reasons—among them that anxiety to complete his Flora which, as we shall see, was with him literally to the last—which induced him to do so; and I think no one expected he would ever return to England.

I am indebted to his elder brother, Mr. Roland Trimen, a distinguished entomologist, for the following account of the closing scene of Trimen's earthly career:—

"After the attack in August last, which deprived him of all power in his left leg, my brother seemed to rally somewhat, though confined almost entirely to his room, being only taken out into the Gardens at his own request two or three times. On Wednesday morning, October 14th, he was suddenly seized with a feeling of chilliness and violent shakings of the hands and arms, his voice being at the same time somewhat affected. This he himself did not regard seriously, but Mr. Freeman at once went to Kandy to summon the doctor. He lay helpless all the day, and had to be fed with what little nourishment he was able to take. In the later half of the night he slept well, and on Thursday morning his first words were that he felt rather better, and must get up and do a little work at the 'Flora.' This he actually did in the afternoon, and with great effort made a few notes, which, Freeman writes, are scarcely decipherable. This pathetic endeavour still to work on seems to have been the last flicker of his strength; for during the sleepless night of Thursday, the 15th, his attempts to speak were almost inaudible, and on Friday he rapidly passed into a state of coma, though sometimes looking up and smiling when anything was done for him. He was evidently sinking all the afternoon and evening, but was as evidently free from any pain. Between nine and ten in the evening Mr. Freeman was called away for a little, and the hospital attendant on his return reported a change. As Mr Freeman entered the room Henry turned his head towards him, and then lay quietly back, and passed away without a tremour or movement of any kind.

"The funeral took place at Kandy on the morning of Sunday, October 18th, and was attended by two hundred of the European community and by a great number of natives, both headmen and Garden employes. Henry's old servant, Bob Appu, never left the back of the hearse throughout the route from Peradeniya; and on the previous day my nephew writes that he had about 400 applications from natives (old servants, village headmen, &c.) to see 'the old master.' The burial took place in the Mahaiyawa Cemetery, Henry's body being laid not far from the resting-place of his predecessor, Dr. Thwaites."

[The portrait here reproduced was taken by Messrs. Cameron during Dr. Trimen's visit to England in 1887.]

JAMES BRITTEN.

We may supplement the above with a few "notes" from a series of letters on local Botanists which recently appeared in the *Ceylon Observer*:—

The present state of knowledge of Ceylon Botany undoubtedly owes more to Dr. Trimen, who succeeded Dr. Thwaites in 1880, than even to the labours of his illustrious predecessors. Assuming the duties of head of our Botanical Department at the age of 39,* with an already established reputation in Europe as a botanist, he by his great acquirements and steady devotion to science rendered yeoman service to the botanical world generally for 16 years, his death, while truly in harness, occurring in October 1896. From the outset the reorganisation of his department upon more modern and utilitarian principles received his special attention, simultaneously with the investigation of the local flora, collecting and describing new species and elucidating ones hitherto imperfectly understood. He was an authority on Quinology, and in 1883 was engaged by the Madras Government to report on certain problems connected with the Cinchona industry of the Nilgiris. In 1886 he issued his Systematic Catalogue of *Flowering Plants and Ferns Indigenous to Ceylon* 8vo. now out of print; whilst in 1888 he published his *Hortus Zeylanicus*, being a clasified list of plants grown in

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* *Journ. Bot.* 1893, 375.

* Really in his 37th year.—ED. *T.A.*

the Royal Botanic Gardens at Peradeniya. As co-author of the voluminous and standard work, *Medicinal Plants* by Trimen and Bently, he was *au fait* in medical botany, which he turned to good purpose by establishing in Peradeniya Gardens a botanical Museum, containing collections of native and foreign drugs, fibres, timbers, grains, curiosities &c. Branch-garedns were founded by him at Anuradhapura and Badulla, in 1883 and 1886 respectively. The pages of various scientific journals, more particularly the *Journal of Botany*, of which he himself was editor from 1870 to 1880, were frequently enriched by Trimen's contributions on Ceylon Botany, and "no less than fifty papers" stand under his name at the Royal Society, of which he was a distinguished Fellow. His *magnum opus* is however, his *Flora of Ceylon*, which, unfortunately for the Colony, he did not live to finish. The completion of tbis work has, happily, been undertaken by the veteran Sir Joseph Hooker of Kew, Dr. Trimen having completed the first three volumes, with an atlas of plates, which bring the book as far down as Balanophoraceæ in the order of Bentham and Hookers Genera Plantarum. Sir Joseph has creditably accomplished his task, the fifth and last volume being now finished. The plan of Trimens's Flora is acknowledged to be a model of what such floras should be, it being, as far as completed by him, characterised by the critical insight and terse lucidity which always distinguished the author. Though the real value of Dr. Trimen's "Flora" cannot well be estimated, more especially as Thwaites' "Enumeratio"—though superseding preceding works—is of use to botanists only, an idea of its merit may be "inferred from the fact that, according to the preface one principal object of the work is to enable the observers to ascertain the name of any plant they may find growing wild;" afterwards learning "all that may may have been written about it, appreciating its relationship with other plants, tracing its geographical limits, and intelligently investigating its properties and uses." In 1896 shortly before his death, Dr. Trimen contributed to the "Journal of Botany," vol. XXXIV, *A preliminary List of Maldive Plants*, with notes, based on a collection of plants sent him from the Maldive Islands, it being his intention to write later a Flora of these islands. Trimen's name is perpetuated in *Ficus Trimeni* (and others); a tree of this species forms a handsome object in Peradeniya Gardens. Vol. XXXIV of the "Journal of Bombay" is dedicated to this *savant*, and the same volume contains a memoir and a portrait of him.

Still further we may give the closing passage of a brief notice by G. S. Boulger, F.L.S., F.G.S., Professor of Botany, City of London College, appended to Vol. V. of the "Ceylon Flora":—

Tbe zeal with which, on his appointment as Director at Peradeniya in 1879, he took up Thwaites's work was seen in the thorough rearrangement of the plants in the Gardens in scientific order, in much work at economic botany, especially quinology, recorded in his annual official reports, and in a diligent exploration of the island for materials for the present work. He published 'Hortus Zeylanicus: A.... List of the Plants .... in the Royal Botanic Gardens, Peradeniya,' in 1888; a Catalogue of the Library .... in 1899; and a Hand-Guide to the .... Gardens,' in 1890, of which the last-named reached a fourth edition in 1894, whilst reference has also been made to his careful work upon Hermann's herbarium whilst in England in 1886. The climate of Ceylon, however, seems to have proved fatal to him. He aged prematurely, became totally deaf, and was partially paralysed; but, after being again in England during 1895, he insisted returning to Ceylon, hoping to finish the 'Handbook,' the publication of which had begun in 1893. Trimen died at Kandy, October 16th, 1896, and was buried near his predecessor in the Mahaiyawa Cemetery. His name was given by Dr. King, Calcutta, to the magnificent Singhalese banyan *Ficus Trimeni.* The memoir by Mr. James Britten in the 'Journal of Botany,' for 1896 (pp. 489-491), from which most of the above is taken, is accompanied by a portrait from a photograph; but his best memorial in the history of botany in Ceylon, is undoubtedly the present work, though he did not live to complete it. —G S. BOULGER.

In conclusion, we give a couple of extracts from the *Ceylon Observer*. The first is part of an article written by us while absent in England, in defence of our friend against ignorant and impatient local criticism :—

'DR TRIMEN'S WORK IN CEYLON AND—LOCAL CRITICISM.

(From "*Ceylon Observer*," June 30th, 1896.)

"On the eve of the final departure of the Director of the Botanic Gardens, it may seem a little unkind and invidious to enter on controversy as to the merit and usefulness of his administrative, economic, and scientific services to the community. But to compare Dr. Trimen's work with that of Mr. —— of ———useful officer as the latter is in his own sphere—as was recently done by a planting correspondent of the *Observer*, is simply absurd. Take Dr. Trimen's latest work: "The FLORA of CEYLON" in three volumes—why, it is impossible to overestimate the value of this work for practical, educational, and scientific purposes in the Colony, For thirty years, we had been accustomed to listen to the late Mr. A. M. Ferguson's earnest desire that such a work should be prepared for the benefit of all who took an intelligent interest in the vegetation of the island. Dr. Thwaites' great work on Ceylon plants might well be complained of by any "practical planter" as above his head—being essentially a scientific botanists's book. But Dr. Trimen, while taking care to serve the purposes of science, and to be as full and correct as any reasonable botanist could desire, has added a series of most useful economic notes which simply makes his work a treasure house to the ordinary intelligent reader,—to all in fact who wish to know what can be said about each of our plants (useful and ornamental) and especially about the timber trees and economic products of the Island. That the highly accomplished and worthy Director should have persisted in this important undertaking to the sacrifice of his health, if not of all that makes life worth living, speaks highly for his conscientious devotion to duty and deserves the grateful acknowledgement, not only of the Government, but of every right-thinking man in the community. So much for the most important single work, perhaps, which has marked Dr. Trimen's Administration. But we are equally clear that never before in the history of the Island has more attention been given in our Botanic Gardens to every question bearing on the economic as well as scientific side of planting, and tropical agriculture generally, than during the past fifteen years. We speak of that we do know; for as editor both of daily and monthly issues, we have continuously been made the medium of requests for information, of puzzling questions, of plants forwarded for identification by planters—not to speak of our own many editorial queries—and we have never failed to receive the most prompt and satisfactory attention from Dr. Trimen."

Next we have the closing scene :—

"DEATH OF DR. TRIMEN.

(From "*Ceylon Observer*," Oct. 19th, 1896.)

"We regret to have to announce the death of Dr. Trimen, late Director of the Royal Botanio Gaadens, which event took place on Friday

night at Peradeniya. The news of Dr. Trimen's death will be received not only in Ceylon, but in all scientific circles at home and abroad, with regret. His work was well-known and appreciated throughout Europe as an authority on many botanical questions, and it was in connection, with the completion of his Hand-book to the "Flora of Ceylon," that, after retiring from the active work of the position which he had held with so much distinction, he recently returned to Ceylon. When most men would have rested from labour Dr. Trimen, in face of trying deafness and weakness, bravely gathered his remaining strength to endeavour to finish the work he had taken in hand, "to enable observers in Ceylon to ascertain the name of any plant they may find growing wild...and to intelligently investigate its properties and uses." This work we hope, has, if not entirely, been almost completed. Dr. Trimen has died in harness, amidst the surroundings which marked a busy though quiet life. Our Kandy Correspondent writes:— "It is with deep regret that we chronicle the death of Dr. H. Trimen, late Director of the Royal Botanical Gardens, which occurred at the Director's bungalow, Peradenia on Friday night at ten o'clock. The deceased gentleman was in his usual health on Wednesday and was able to pay a visit to the Botanical Office, but he was seized with another attack of paralysis on Thursday, losing the use of his hands and his power of speech. In this state he remained till he expired on Friday night. The sad intelligence was received here on Saturday and came as a surprise to many. The deceased Director had served sixteen years under the Ceylon Government and his death is a very heavy loss to the island. Dr. Trimen even while ill and in bed was busily engaged on his monumental work, the Flora of Ceylon. The arrangements for the Funeral were made by the late Doctor's nephew Mr. Roland Trimen."

"THE FUNERAL.

"The Funeral cortege started from the Botanical Gardens, Peradeniya, at 7-15 on Sunday morning for St. Paul's Church, where the first portion of the funeral service was read. A large number of leading residents met the remains here. From the church the remains were conveyed to the General Cemetery, at Mahaiyawa, where a service was read by the Rev. E. A. Copleston who officiated. The coffin was covered with wreaths of flowers, which were afterwards placed on the grave. The Hon. A. C. Lawrie Puisne Judge, came specially for the funeral. Among those following the remains were the Hon. Allanson Bailey, District Judge de Saram, Messrs. Roland Trimen, Freeman, H. F. Macmillan (Curator), Vaughan, Munton, Ward, Fretsz, Bishop, Lowe, Alexander Philip, Caldecott, Gibbon, Siebel, Rix, Campbell, Skeen, Gray, Ralston White, Major Tranchell, Messrs, Tranchell Way, Sproule, Webb, Dove, De Lemos, Maddock, Gordon, Ferdinandus, Fleming, Captain Murray, Drs. Dias, Hardy, Anderson-Smith and Keith, Mrs. and Miss. Rouse, Mrs. and Miss Algernon Jonklas, Mrs. Skeen, and the Rev. Mr. Beven. Besides these there were following immediately behind the remains all the coolies, watchers and servants employed at the gardens. Dr. Willis, the Director, and Mr. Nock, Superintendent of Hakgalla Gardens were not present being engaged at Hakgalla, and a wire which was sent did not arrive in time to enable them to be present."

We take the following from *Men and Women of the Time*:—

"Trimen Henry, M.B., F.R.S., F.L.S., was born in London, Oct. 26, 1843, and was educated at King's College. He graduated M.B. at the University of London, 1865; was Curator of the Anatomical Museum of King's College, 1866-7; and Lecturer on Botany at St. Mary's Hospital Medical School 1867-72 He entered the Botanical Department of the British Museum, as Senior Assistant, May 1869, and held that appointment till Dec., 1879. He was appointed Director of the Royal Botanic Gardens, Ceylon, Jan. 1880, which post he still holds. He was editor of the *Journal of Botany*. 1872-79; and author of "Flora of Middlesex" (with Mr. Thiselton-Dyer), 1869; of the botanical portion of "Medicinal Plants," 4 vols., 1875-80; of a "Systematic Catalogue of the Plants of Ceylon," 1885; and of numerous papers on various branches of botanical science in the publications of the learned societies and scientific periodicals. Dr. Trimen has paid special attention to the economic aspects of Botany, particularly to the sources of drugs and other products, especially of tropical countries. In 1883, he was employed by the Madras Government to report on the botanical and cultural problems presented by the cinchona plantations in the Nilgiri Hills; and he has been the means of introducing into cultivation in Ceylon many useful and valuable products of other countries."

In conclusion we may quote the words of one who worked under him:—"I know nothing about Dr. Trimen but what is good, and I never had one single angry word from him. He was an excellent chief and a good and true friend, and I always felt as though I could do anything for him." Similar testimony is borne from all sides, and we may well say that in Dr. Trimen Ceylon lost one of its most distinguished, accomplished and useful public officers; while not a few officials, as well as Colonists and Ceylonese, lost a loyal and warm-hearted friend.

OVERHEAD NETTING FOR TOMATOES.

A correspondent of the *Garden and Field* says on this subject:—this is a plan I have not tried, but I know where it is used with success. A number of stakes 2 inches or so in thickness, and from 18 inches to 24 inches long, are prepared and driven in the ground at intervals along the row of plants, thus:—

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o     o     o     o     o
   o     o     o     o
o     o     o     o     o
   o     o     o     o
o     o     o     o     o
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The stakes are driven so that the tops are even and about 12 inches out of the ground; and over the whole a piece of wire netting of 2 or 3 inch mesh is stretched and nailed to the tops of the pegs. The plants are allowed to grow up through the netting and spread over the upper surface. I believe the plan answers well, and has the merit of being no trouble after being put up. In this case the growth of the plants is not regulated. I describe it for the benefit of readers, and am trying it on a row of plants. I shall, however, use a less number of pegs, and put crosspieces of batten to support the netting.

If the tomato plants show signs of disease by an unhealthy appearance of leaves, or scabby fruit, they should be at once sprayed with Bordeaux mixture of a strength of 4 lb. of bluestone, 4 to 6 lb. of quicklime, and 40 gallons of water.—*Queensland Agricultural Journal.*

PINK LILY OF THE VALLEY.—Dr. Houseman, of Houghton-le-Spring, sends us a spike of Lily of the Valley, in which the flowers are very small, but of a distinct rose-pink colour. The variety is now rarely met with, but in the time of our fore-fathers it was more frequent, though never abundant.—*Gardeners' Chronicle.*

AGRICULTURAL EDUCATION IN GREATER BRITAIN.

PAPER READ BEFORE THE FOREIGN AND COLONIAL SECTION OF THE SOCIETY OF ARTS, ON TUESDAY FEBRUARY 27, 1900.

BY R. HEDGER WALLACE.

(Continued from Vol. XIX., page 801.)

The two factors that must influence all efforts in the West Indies are the problems of tropical cultivation and the wants of a native peasantry. The first step taken, therefore, in what might be termed the new era of agricultural education in the West Indies, was the establishment and development of the institutions known as botanic stations. These are small and inexpensive gardens devised in order to afford practical instruction in the cultivation of tropical crops and were first intended to meet the special requirements and develop the agricultural resources of the smaller islands in the West Indies. The first stations started were at Grenada and Barbados in 1886. Since then stations have been started at Antigua, Bermuda, British Honduras, Dominica, Montserrat, St. Kitt's Nevis, St. Lucia, St. Vincent, and Tobago. There are now in all eleven stations in the West Indies and they are in close relationship with Kew.

The next step taken to advance the interests of agricultural education was the establishment at Barbados of an Imperial Department of Agriculture for the West Indies, with Dr. Morris as Commissioner. As regards agricultural education this Department has three objects in view:—

"(1) To start industrial schools for training boys in agricultural pursuits. (2) To encourage the theoretical (and to some slight extent the practical) teaching of agriculture in elementry schools. (3) To promote the teaching of scientific agriculture in college and schools."

I have been favoured with an advanced proof of the second West Indian Agricultural Conference which was held at Barbados on 6th January, 1900. In his opening address I note that Dr. Morris says:—

'The scheme of agricultural instruction suggested to meet the immediate requirements of elementary schools aims first of all at rendering the existing teachers competent to give simple object-lessons bearing on agricnltre and illustrate them by experiments and actual specimens. Examples of growing plants should be grown in pots and boxes under the eyes of the children, and every stage of their growth as well as the conditions favourable for rapid and successful development should be clearly explained. This much is within the reach of the poorest school in the West Indies. All, however, depends on the amount of knowledge and the interest thrown into the subject on the part of the teachers. It is proposed to assist the teachers at present in charge of schools by affording them the means of attending courses of lectures during their holidays. While attending these lectures all out of pocket expenses (except in British Guiana, Trinidad, and Jamaica) are paid by the Imperial Department of Agricultnre. Lectures to elementary teachers were started last year at Trinidad, St. Lucia, and Barbados—in each case with singular success. They will be continued next week (January, 1900) at Tobago, Grenada, St. Vincent, and Dominica. The teachers so far have shown themselves most anxious to acquire knowledge of the principles of agriculture, and it is anticipated that during the next two years most of the existing teachers throughout the West Indies will have passed through the initial course of training. The teachers now at the training colleges and all future students passing through such colleges should be fully instructed and be competent to teach agriculture before they are placed in charge of schools. For the present Blackie's "Tropical Readers," Books I. and II., are recommended for use in schools, but great care is required to prevent mere book knowledge, which is worthless, taking the place of the intellectual education and the hand and eye-training necessary for agricultural pursuits."

Dr. Morris further states that—

"As a higher stage in agricultural education it is proposed to maintain agricultural schools—the first at St. Vincent, St. Lucia, Dominica, and St. Kitts. The boys will be fed, clothed and trained free. Admission to these schools will be offered as an exhibition to boys in elementary schools of about 14 years of age who have passed the IV. standard and who show moral and intellectual aptitude for such instruction. We have next the scheme of instruction in agriculture to boys in Secondary and High Schools assisted by the special lectures in agriculture provided by the Imperial Department. At the same schools scholarships are offered to boys from the country districts, the sons of planters in moderate circumstances, who intend to devote themselves to agricultural pursuits. Lastly, there are lectures to the younger generation of planters and others engaged in agricultural pursuits to afford information and assistance in elucidating the scientific problems which undertake the practical work in which they are daily engaged "

So far then this describes what has been done generally in the West Indies in the interests of agricultural education. The work done specifically in some of the islands might also be mentioned. For instance in Jamaica there is now a Lecturer in Agricultural Science, and at the Hope Industrial School practical lectures in agriculture are given by the Superintendent of Hope Gardens. The Jamaican Education Department also offer, by grants, assistance to elementary schools for the teaching of agriculture as a special subject, and a practical elementary text book of tropical agricultnre for use of the schools in Jamaica has been published. In addition it is stated all country schools are expected to teach the elementary principles of agriculture as a part of the general course. Two Jamaica readers—"tropical readers"—have been brought out by the Board of Education, and a supplementary reader in tropical agriculture is in contemplation. In the training colleges for teachers, the principles of agriculture are required to be taken up in the second year's course The question of providing higher agricultural education for those who may become proprietors and managers of estates have not yet been touched in Jamaica.

Coming next to the Leeward Islands, there is a botanic station at St. Kitts Nevis, but no attempt is made to teach agricnlture in the schools there or at Anguilla.

Antigua, I find, has an officer who is called the agricultural superintendent of sugar-cane experiments. Formerly there was here a department of agriculture for the Leeward Islands under a scientific superintendent. It was founded in 1891, and abolished in 1894.

At Dominica there is an agricultural instructor attached to the botanic station, also an agricultural school with a qualified officer in charge. There is also an agricultural instructor attached to the botanic station at Montserrat.

St. Lucia is another island which has an agricultural instructor, and there is one also at St. Vincent. The latter island has in addition an agricultural school in charge of a separate officer.

At Barbados there is a Lecturer on agricultural Science at Harrison College, Bridgetown, who also holds the position of island Professor of agricultural Science. Agriculture is also taught practically at the boys' reformatory school at Dodds.

At Grenada efforts are being made to teach agriculture theoretically in the elementary schools, and to start school gardens, and also to utilise the services of the Curator of the Botanic Station to give lectures and demonstrations.

Tobago has a cacao instructor attached to the Botanic Station, but agriculture is not taught in the schools. Neither is it taught in the elementary

or insdustrial schools of Trinidad. It is stated, however, that lectures on agriculture are given at the Victoria Institute, Port of Spain. According to Mr. Moore, instruction in fruit and banana cultivation is also given in this island, and the school teachers are provided with various agricultural publications.

In British Guiana there is an agricultural assistant attached to the Botanic Gardens at Georgetown; and the Royal Agricultural Society in this colony, I am informed, approached the Governor in Council in 1898, with the view of having an agricultural school and experimental farm established and also of having plots of land attached to country schools, where pupils would spend a portion of their time daily in learning practical agriculture.

Leaving the islands of the West Indies, and the Crown colonies on the mainland, I now proceed to notice the several self-governing colonies which form the Australasian section of Greater Britain.

In the mother colony of New South Wales, agriculture is taught in the state schools, either under object-lessons or natural science. It is also an optional subject for teachers in the series of examinations they undergo to obtain promotion from one grade to another. An agricultural text book, for use in the schools, has also been published by the Department, and an itinerant lecturer on garden and farm work visits the more important schools.

Under the scheme of technical education, also carried out in Sydney and various country towns, courses of instruction in agriculture, sheep and wool-classing, wool-sorting, and veterinary science are provided.

Agricultural education, pure and simple, is however, in the hands of the Department of agriculture. There is, under this department, the Hawkesbury Agricultural College, with experimental farm attached located near the town of Richmond. The complete course of instruction at this institution covers a period of two years of four sessions, and the subjects taught are "practical agriculture, principles of agriculture, agricultural chemistry, botany, geology, entomology, farm-book keeping, veterinary science and practice, arithmetic and English, elementary surveying and mechanics." The practical work at which all students have to engage in is noted as follows:—

"(1) Milking cows, making butter, use of dairy appliances. (2) Killing and dressing sheep. (3) Carpentering work, such as mortising and cutting tenons, setting out roof. (4) Blacksmith's work, welding iron, making bolts, fitting and putting on horse-shoes. (5) Fencing, mortising posts, putting up wire or other fences. (6) Yoking up and driving bullocks, horse work, hay loading, farm implements, engine work."

Though the Hawkesbury College is the only one in the colony where the whole science and practice of agriculture is taught, the scheme of education originally formulated embraced the establisement of "certain farms and orchards typical of the most important climatic regions of the colony, where those who did not desire to undertake the comprehensive training of the college might be instructed purely in the practice of the various branches of agriculture."

For such experimental farms have now been established. The Murrumbridgee, or Bomen Experimental Farm, near the southern town of Wagga-Wagga, represents the comparatively dry Riverina region; the Woollongbar Experimental Farm, in the Richmond River district, is in the sub-tropical region; the Bathurst Experimental Farm represents the western plains and colder portions of the colony; while the experimental farm at Coolabah, in the Bogan Scrub, has been established for experiment in the arid portion of the colony.

In all these experimental farms lectures on agriculture are given, and the course is for a year of two sessions. Students at the central college are advised to continue their course at one of these farms, for the student there is "afforded some practical experience of the cultivation of land in a climatic region typical of that in which he intended to settle." According to the Minister for Agriculture, "training at college would provide him with a general and practical acquaintance with farming in all its branches, but to enable him to become (for example) a successful western New South Wales cultivator a little practical experience of dry country method, is absouletely necessary."

Additional means of imparting information and instruction is further afforded by the employment of a dairy expert, a fruit expert, a viticultural expert and a travelling agricultural instructor, who for a number of years, was principal of the Agricultural College. An *Agricultural Gazette* is now published, which in value approaches some of the publications issued by the United States Department of Agriculture —a department which is generally admitted to be the best organised and most practical of any Government in the world. In passing, I may note that I find it stated in the Report of the the New South Wales Under Secretary for Agriculture, 1899, "that amongst the 100 odd young men undergoing the full course (at Hawkesbury College) are several from England, Cape Colony, the neighbouring colonies and Japan."

Respecting Queensland, the Agent-General for the colony has been good enough to reply to my enquiries as follows:—

"1. Agriculture is not taught in the elementary schools of the colony, but

"2 Four State bursaries are granted, giving free board and instruction to resident students for three years at the Government Agricultural College at Gatton. Admission is by competitive examination in reading, writing, arithmetic, English composition geography, mechanics, and drawing to scale. Candidates for these bursaries must be between 16 and 18 years of age, of sound constitution and good health, and themselves must have resided in the colony two years and their parents three years preceding the examination.

3. The agricultural College at Gatton was established in July, 1897. The college farm or ground comprises an area of 1,692 acres. Dormitory accommodation is provided for 56 students. The buildings include a chemical laboratory and lecture room, The fees, which cover instruction, board, washing, room rent and lights, are £25 per annum. The students are engaged for one half the time at manual labour, a day of out-door work alternating with a day of study.

"4. Experts in dairying and other subjects are employed by the Department of Agriculture to travel throughout the colony and give personal instruction to farmers. Bulletins on various subjects of interest to farmers are also issued by the Department, which with the *Queensland Agricultural Journal*, are freely distributed."

EXPERIMENTS TO PRESERVE TIMBER.

Years ago experiments were made at Geisenheim, by Professor Giseyius, of Koenigsberg, with 6 feet long poles from pines, to be used for vines, and it was found that several fluids were better for preserving than merely burning the ends. Oil of tar and carbolineum were found useless, inasmuch as the creosote in them gave that taste to plants growing near, and other fluids were too expensive. But a solution of 2 lb. or 3 lb. of bluestone was found to be cheap, easy to use, and well preserving. Later experiments were made in the Agricultural School at Dahme, and at the hop garden at Sussenthal with pine and fir poles, 24 feet long, and with fencing posts. The solution impregnates, and rises within three or four days to the top if you remove the bark from freshly cut stems and place the lower end into it. In trees cut some days before they are peeled and put into the solution, it rose only from 3 feet to 6 feet high. If it freezes this method cannot be used; the warmer it is better. The casks must be very strong, and have to be filled up twice a day. For 90 hop poles, about 24 feet long, it required 6 lb. of bluestone.—*Queensland Agricultural Journal*.

TEA COMPANIES (LONDON-CEYLON): —AREA PLANTED AND CAPITAL.

One of the most complete lists of Ceylon Tea Companies registered in England, is that compiled by Mr. George Seton, of the Indian Tea Share Exchange, Bishopsgate Street, and it especially shows very clearly, the contrast between the area planted and the amount of capital raised, as also of debentures if any. The latest of these lists, made up to December 1899, is before us, and we have had the "capital" plus "debentures" divided by the "planted acres" in each case, in order to see at a glance how the several Companies work out. We need not tell Ceylon readers that, several other matters, besides the proportion of planted area to capital outstanding, have to be taken into account in appraising the actual value of a Company's properties. So much depends on district, soil, planting and jât of tea, that it is quite possible for a Company with a heavy capital outlay per acre, to be in a sounder position than another with not much more than half the same ratio of capital outstanding. Nevertheless, for a rough and ready test of the position and prospects of a Company —with certain important exceptions which can be allowed for—the capital outstanding per acre, is a very convenient form of reckoning.

First of all, we may mention that in the list before us, there are 68 Companies specified with an aggregate planted area of 137,657 acres (over one-third of the total in Ceylon) having a subscribed capital of £4,940,699, besides £1,244,353 of debentures—thus working out to an average of £45 per planted acre. If we now look for the two extremes in the list, we find the Lindoola Company on the one hand with 320 acres ("planted" will always be understood) and £39,000 capital, which works out at £122 per acre; and next to it "Gartmore," 454 acres and £48,000, making £106 per acre. At the other end of the scale, we have the "Ceylon Land and Produce," 4,038 acres, £68,300 capital plus £19,125 debentures, working out to £21 per acre; next to this Namunakula Estates Company 1,160 acres with £25,000 capital, also the Scottish Trust and Loan Co. 2,025 acres with £45,000 capital, both making £22 per acre; and then the "Ceylon Plantations," 10,820 acres with £248,460 capital, making £23 per acre.

Going on from the minimum side, we find nine more Companies which stand at under £30 per acre, namely "Ederapolla"—1,030 acres, £25,500 and Tyspane 778 acres, £19,500 capital and debentures:—both making £25 per acre; "Poonagalla," 1,149 acres, £30,000 capital and debentures, making £26; "Standard," 2,487, acres, £69,500 capital and debentures; "Rangalla," 782 acres £22,000; "Battalgalla," 677 acres and £19,000; "Burnside," 1,138 acres, £32,100; and "Kelani," 1,236 acres, £34,965:—all five Companies working out to £28 per acre; then there is the Scottish Ceylon with 1,720 acres against £50,000, working out to £29 per acre.

Next between £30 and £40 per acre, we have thirteen Companies, namely, Abbotsleigh; the Consolidated Estates (3,834 acres against £127,400 capital); Digalla, Midland and Eastern Produce and Estates Co.:—each of which works out to about £33 per acre. The New Dimbula Company (with 2,345 acres cultivated and £78,954 capital) makes £34 per acre. The Goomera Company gives the same ratio of £34; while Bandarapolla equals £35; and both Carolina and Hunasgiriya work out to £36 per acre. Then three Companies—Ouvah, Craighead and Panawal—show an average of £38 per acre against capital.

Next we come to those between £40 and £50 per acre, of which there are nine Companies, namely, Ceylon Estates Investment, £40; Alliance, Anglo-Ceylon, and Kellie Companies, each £41; Duckwari, £43; Yatiyantota, £45; Central Province, and Ceylon and Indian P. A., each £47; and Sunnygama, £48 per acre.

Between £50 and £60, we find sixteen Companies, namely, Haputale and Central of Ceylon, £51; Lanka, Spring Valley and Nahalma, each £52; Imperial, South Wanarajah, Tea Corporation and United Planters, each £53; Ceylon Proprietary and Highland, each £54; Galaha, Mayfield and Ragalla, each £55; Associated Estates, £57; Punduloya, £58.

Finally, we have fifteen Companies from £60 to £91 per acre, namely, Caledonian £60; Korale Company, £61; Hornsey, £63; General Ceylon and Augusta, each £65; Vellekellie, £70; Maturatta, £71; Kandapolla, £73; Kintyre, £74; Portmore Company, £77; Dimbula Valley and Talawakelle, each £78; Balmoral £85; Nuwara Elliya, £88; and Bogawantalawa, £91; while we have already specified Gartmore £106 and Lindula £122 per. acre.

SOME USEFUL MEASUREMENTS.

For estimating the areas of paddocks and cultivated plots, the following figures will be found useful:—

60 feet	by	726 feet	... ...	1 acre
110	,,	396 ,,	... ...	1 ,,
129	,,	363 ,,	... ...	1 ,,
220	,,	198 ,,	... ...	1 ,,
240	,,	181½ ,,	... ...	1 ,,
440	,,	99 ,,	... ...	1 ,,
5 yards	by	968 yards	... ...	1 ,,
10	,,	485 ,,	... ...	1 ,,
20	,,	242 ,,	... ...	1 ,,
40	,,	121 ,,	... ...	1 ,,
70	,,	69½ ,,	... ...	1 ,,
80	,,	60½ ,,	... ...	1 ,,

A British halfpenny measures exactly 1 inch in diameter. Laid on a map drawn to a 1-inch scale it will just cover 500 acres.

SIZES OF BOXES OF DIFFERENT MEASURES.

	in. long		in. wide		in. deep		
A box	24	by	16	and	28	will contain	3 bushels.
,,	24	,,	16	,,	14	,, ,,	1½ ,,
,,	16	,,	16	,,	8 2-5	,, ,,	1 ,,
,,	16	,,	8 2-5	,,	8	,, ,,	½ ,,
,,	8	,,	8 2-5	,,	8	,, ,,	1 peck
,,	8	,,	8	,,	4 1-5	,, ,,	1 gallon.
,,	7	,,	4	,,	4 1-5	,, ,,	½ ,,
,,	4	,,	4	,,	4 1-5	,, ,,	1 quart.

CUBING TIMBER.

To measure square timber: Multiply the length, width, and thickness together, and divide the product by 12.

How many square feet in a joist 2 x 8, 18 feet long?

2 x 8 x 18 = 288 ÷ 12 = 24 feet. Ans.

—*Queensland Agricultural Journal,* April 1.

CEYLON TEA PLANTATIONS COMPANY, LIMITED.

STATEMENT SHEWING RESULTS OF WORKING FOR THE 13 YEARS ENDING 31ST DECEMBER, 1899.

Year.	Acreage of tea bearing.	Yield per Acre.	Rate of Exchange per Rs.	Sale Price of Tea London.	Estate Tea.	Bought Leaf Tea.	Tea manufactured for others.	Total.	Capital Issued. Ordinary.	Capital Issued. Preference.	Net Profits.			Additions to Reserve.			Depreciation. From Profits.			Depreciation. From Premiums on Shares issued.			Depreciation. Total.			Dividends. Ordinary.	Dividends. Preference.
	Acres.	lb.	d.	d.	lb.	lb.	lb.	lb.	£	£	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.		
1887	1,251	403	1/5 14-32	13·00	504,380	84,268	10,131	598,779	75,090	...	13,257	12	3	..	...	...	..	..	..	..	..	..	..	..	..	15	None issued.
1888	1,405	394	1/4 28-32	10·50	554,235	193,208	102,909	850,352	76,190	...	10,258	1	10	..	...	...	12	9	3	..	..	..	12	9	3	15	
1889	2,773	338	1/4 28-32	11·00	937,407	799,779	277,148	2,014,334	122,040	..	23,370	14	8	3,000	0	0	1,867	2	3	..	..	..	1,867	2	3	15	
1890	3,947	387	1/6 24-32	11·00	1,503,102	598,427	838,237	2,939,766	143,970	30,000	31,002	3	6	5,725	0	0	4,010	15	9	..	..	..	4,010	15	9	15	7
1891	5,168	414	1/5 19-32	9·27	2,086,291	886,565	1,318,735	4,291,591	146,590	70,000	31,233	3	9	5,493	8	0	..	..	..	..	..	..	..	..	..	15	7
1892	6,584	376	1/3 20-32	9·38	2,481,938	796,766	1,387,995	4,666,699	147,140	73,440	37,146	1	11	10,781	12	0	..	..	..	6,275	7	3	6,275	7	3	15	7
1893	7,167	419	1/3 8-32	8·85	3,009,055	539,615	1,418,258	4,966,928	167,380	81,080	43,986	12	7	10,000	0	0	2,500	0	0	4,984	6	11	7,484	6	11	15	7
1894	7,879	372	1/1 18-32	8·84	2,971,987	616,692	1,236,819	4,825,498	167,380	81,080	48,603	1	4	15,000	0	0	3,500	0	0	..	..	..	3,500	0	0	15	7
1895	8,073	437	1/1 15-32	8·09	3,530,737	665,603	1,110,564	5,306,904	167,380	81,080	51,926	10	10	20,000	0	0	2,000	0	0	..	..	..	2,000	0	0	15	7
1896	7,998	470	1/2 37-64	8·14	3,763,167	505,586	1,214,843	5,483,596	167,380	81,080	48,986	10	8	15,000	0	0	4,000	0	0	..	..	..	4,000	0	0	15	7
1897	8,067	495	1/3 13-32	7·85	4,000,516	503,840	1,019,789	5,524,145	167,380	81,080	42,199	3	0	5,000	0	0	5,000	0	0	..	..	..	5,000	0	0	15	7
1898	8,067	460	1/4 3-16	8·24	3,714,316	355,571	1,005,294	5,075,181	167,380	81,080	41,381	4	4	5,000	0	0	5,000	0	0	...	...	...	5,000	0	0	15*	7
1899	8,199	485	1/4 19-64	8·10	3,973,820	566,664	517,663	5,058,147	167,380	81,080	48,062	17	1	5,000	0	0	5,000	0	0	..	..	..	5,000	0	0	15*	7

* A bonus of 3 per cent.

A FARMER'S EVERY DAY LIFE.

(By Cosmopolite.)

No. V.

The first great step that has to be taken, when about to commence a farming life, is to be sure that you have succeeded in leasing the sort of farm you wish for, and that you have it at

A FAIR RENT.

When a farm comes into the market, now a-days many outsiders enter the list of competitors for it, and such men as retired merchants and Ceylon planters, having no idea of the value of land, but only wishing to procure a home in the country for themselves, offer a much higher rent than a practical farmer would care to give, and so rents have been forced up to such an extent that I know several cases of professional farmers who are paying more rent for their farms than they consider them to be worth, simply because they feared to be left out in the cold, without a farm at all. I have seen the whole of the best land in Scotland, from the Howe o'Buchan to that wonderful pear garden, formerly the property of the monks of Jedburgh, and said to be the richest piece of soil in the whole of Great Britain, but there is not an acre of it that I would be inclined to give more than £1 a year of rent for, so long as I know that there are millions of acres, of far better land than anything that we have in this country, lying idle at the antipodes—land which is waiting to be purchased right out by any one, at a price varying from 5s to £2 an acre. It may be said that these acres lie too far from a market, but to that I reply that such is not the case, for the market of London is the market of the world, and thanks to steam, low freights and this parental Government of ours, which, to the best of its ability, fosters and encourages foreign agriculturists, whilst it tries in every way to discourage the native producer. The grain and mutton grown in Australia can be laid down at a cheaper rate, in London, than the same commodities can be which have been grown on the farms of Aberdeenshire. I make, of course, exceptions in the cases of

FARMS CLOSE TO TOWNS,

which can be utilized for dairy purposes and market gardening, and our merely referring to such as lie some miles from any town or village, and which would likely be taken on lease by retired East Indians. I have no hesitation, therefore, in stating that, for such a farm, a rent of £1 an acre, per annum, is the highest that anyone should pay, and expect to hold his own, or perhaps make a little profit, and this, I may remark, is the figure I pay for my own farm. One thing however I would caution an amateur farmer against, and that is—taking a farm because it is low rented. For example; I know one man, afar from practical farmer, who had leased a place at 25s an acre, but found, in the course of a few years, that he was losing money, so, having succeeded in breaking his lease, he went to the other extreme and rented one at 11s; but the farm he threw up used to give him six quarters of oats to the acre,

whilst the one he took so cheaply only gave him three to four quarters, and so the last stage of that man was worse than the first. A very low rented farm is, generally, one that is not worth taking in at present, and only farms that can be worked up to the highest state of cultivation are worth taking on lease now-a-days. The low prices ruling for grain, beef and mutton compel one, not only to secure a good farm at a fair rent, but also to cultivate it at high pressure, in order to pay the labour bill and have something over. Farming on the cheap won't do at all, and, if high farming won't pay, certainly low farming will not do so.

Having secured the farm that he wishes, or perhaps has been obliged to take, for want of a better, the next step of greatest importance is the securing of the proper kind

OF LABOURERS,

and this is not such a difficult thing after all, in spite of the out cry about the scarcity of labour. The ordinary course is to go to a fee-ing market, and there engage the number of hands required, and these are engaged for six months, during which time their faults and failings are discovered, and a fresh lot is engaged at the next term. That has not been my policy, and I find my own way to work fully better than the usual custom of the district. I have never been at a fee-ing market yet. I engaged my men by their looks and the characters I had heard given to them, and these men have been with me ever since I came to this farm. I treat them well, and they treat me in the same way in return. They will work extra time and out of all hours without a grumble, and, when they want a day's leave, they know that they only have to ask for it, and they will get it. These men were in the habit of changing their places every six months, like other hands, before they came to me, but now they appear to have settled down for the term of their natural lives, and cultivate their bit of garden, as if they own it, and had no fear of its being taken from them. In New Zealand and Australia my servants never left me, after being engaged, and my coolies in Ceylon remained with me the whole time I was there; whilst my dressing-boy was with me during the whole time of my stay in your island.

Now I would recommend others to adopt the same policy with their hands, remembering that the frequent changes made by servants is accounted for, not so much because they are incapable, as because their masters are unreasonable. Many so-called gentlemen farmers think it degrades them to speak

IN A FRIENDLY WAY

to their hired servants, and so these can never have the same regard for their master's interests as they would, if treated in a more friendly way. My men have been so long with me that they can fit themselves to the work more systematically than could others, who are changed every six months; and so I know that I get much more work done, for my money, than my neighbours do. The labour bill is the bugbear of farmers; not only do they find a difficulty in getting hands, but they find a greater difficulty in getting as much work out of them as will pay their wages.

The custom which obtains, in Ceylon, of taking creepers at a high premium, and professing to teach them the noble art of tea planting is not singular in its conception, as a somewhat similar means of livelihood is indulged in, by farmers and even landed proprietors in this tight little island, who, for a tidy consideration, take

MUD-STUDENTS

into the bosom of their families, and make a pretence of teaching them to be practical farmers. There are no mud-students in this district of Scotland, but on the borders as many as three and four are to be found on various farms, paying from £300 to £400 per annum, which entitles them to keep a hunter, and to follow the hounds as often as their horse can be found capable of the exertion. Most of these young men, that I have come across, served in their salad days as soldiers, and consequently are quite unfit for any other profession, especially one that requires as much commonsense as farming does; but they live a rollicking life and no doubt get a full value of amusement in return for the premiums they pay. The hardest work that any of them does is executed to the strains of the "Blue Danube" or "Pas de Quatre;" and when the hunting season is past, they spend their time sitting on a log smoking extra strong tobacco. At fairs and sheep sales, on the borders, the mud-students assemble from far and near and are easily known because they are ever the horsiest in their outward appearance, just as you find the very plain young person is always keenest at the Sunday-school class. Military men don't look well on horseback; there is an old saying—"Riding straight up and down, like an officer"—which exactly expresses the attitude peculiar to the military rider. It has been truthfully said that riding seems a physical impossibility for sailors, tailors and dragoon officers; yet I have seen military men ride well to the front, both on the flat and over the sticks, although this might be accounted for, as a friend of mine once pertinently said, because the great art of jockeyship was in being on the best horse. The system of taking mud-students on, at high premiums, has helped to keep the ancestral roofs on many family mansions, and no doubt the creeper has been the means of enabling many a hard-up planter to pace his mortgaged verandah for some years longer than he otherwise might have done.

POULTRY FANCIERS

have been sadly depressed lately, owing to a sudden drop in the price of eggs, which fell, with a bang, from 18d to 6d a dozen. One of my neighbours had tears in her eyes as she told me the fateful news, and asked me if I could account for the sudden fall in price of her principal market staple. I tried to comfort her by saying that probably the quality had something to do with the matter for I believed that, at this season of the year, hens were frequently not very

well, and often laid bad eggs; but she refused to admit of any such suggestion. Another neighbour openly vowed that rather than sell at such a figure, she would have all the eggs from their poultry yard eaten in the family circle, and as they have about 500 able-bodied hens on the premises, they appear to have undertaken a pretty heavy contract.

NO. VI.

(*By Cosmopolite.*)

The worst kept part of a farm is generally the garden, which only receives attention when no other work of a remunerative nature has to be attended to. Pleasure is all that can be derived from a garden, and profit is conspicuous by its absenee, and thus the farmer—the poor but honest agricultnrist—can ill-afford the time and expense of keeping his garden in order. Some cranks —like the late Mr. Gladstone—rave about the possible profit from

FRUIT-GROWING

and jam-making, but this idea has, long since, been exploded, and my own practical experience may serve to explain the reason why. One year I put on pickers to clean up my fruit trees and bushes, and sent the result of their labour to the town, where I got the highest price agoing for it, the sum total of which, however, amounted only to a few shillings, *less* than it had taken to pay the wages of the pickers, to say nothing about the cost of manuring, pruning and general upkeep of the garden. Since that date my policy is to use as much of the fruit as I possibly can, in my own establishment, the balance being given to any of the neighbouring working-men's wives who care to come and take the trouble to pick it. When I came here, I found the black-currant bushes, in appearance, much like the coffee trees in the back fields of some of the old *totums*, of my own planting days. I promptly went in for a heavy pruning, and have used the knife freely, every year since, with the result that I see no black currants at all able to compare with my own in size and quality. I may here mention that I do my own gardening, and, as the ground extends to two acres besides lawn tennis green, &c., to be kept in order, those of my readers who know anything about gardening will understand that I have a good deal of work to do in my spare time, to say nothing of the fact that I feel the stooping and digging more exhausting than I did, before the microbe of corpulency laid its grim claws upon me.

GARDENING,

now-a-days, is a stiffer job than it was in the garden of Eden before weeds had sported to any great extent, and when dockens and carlie-doddies were unknown. Beside that, my illustrious ancestor Adam never got into trouble with his wife, for spoiling his clothes, or making the knees of his trousers baggy through kneeling in the flower beds, as I find it necessary sometimes to do. In my planting days we were all great on hand weeding, and I, naturally, adopted the same policy in my own garden, but, although I kept my ground remarkably clean, I found my gooseberry, raspberry and currant bushes becoming, year by year, less productive. At once I jumped to the conclusion that it was from want of air at the roots, so I proceeded to dig up the ground as deep as I could with a grape, the result being like magic: the bushes took a new lease of life; the crop doubled itself and the actual labour of weeding was reduced to about one half. I remember once applying cattle manure to a coffee field, in Rangala, and having the whole surface dug over with grapes, and from that field, I got, by far and away, the best crop of the year. At that time I attributed this to the manure, although I wondered why the other fields, that had had the same sort of manure applied to the roots of the bushes, had not responded so well; but now I cannot help thinking that the digging, and the letting of the air into the ground, had more effect than the manure itself; perhaps some planter will try digging, on a portion of his estate, and report results. To me this season of the year, in the garden, is the most enjoyable, when the place fairly blazes with lilies, auriculas, primroses, wall flowers and others of like sorts, for these good old-fashioned flowers are the ones I most admire. Some people there are who can't get on without their begonias, orchids and ageratums; but these flowers are so associated, in my mind, with weeding contracts and ghastly outlays of rupees to keep them down, that I cannot go into ecstasies over their beauties.

OUR VILLAGE

was once again *en fete*, when, the other evening, the Episcopal Church social gathering took place, in the Church Hall situated at the east end of what the sanguine inhabitants denominate the High Street, a delightful break in the boundless monotony of farm life, and at which many members of other denominations put in an appearance, because it has become an understood thing that it is always the most enjoyable entertainment of the year in our village of sweet auburn. We—I speak for myself and the other soges of the parish,—hold this opinion at any rate. After the company had listened to songs and music galore, had drunk blashes of tea and eaten variety biscuits to their heart's content, the seats were cleared away, and, to the inspiring strains of a string band of excellent calibre, we tripped the light fantastic toe till "the sma' oors ayont the twal" began to ring. Patti, Albani and other people have a good record as singers, and it would be hard to compete against them, but our village nightingales gave a wonderfully good account of themselves. One girl struck me all of a heap, and I fain would have danced with her; but she was so sought after by the young bloods that I felt convinced that an old buster like myself would have no chance, so I sat and gazed upon her from afar. The Johnnies, admiringly, christened her "The Rose of St. Fergus," and the name fitted her like a glove whilst she appeared to enjoy herself to the mast head. Perhaps she may come again, to our next social gathering, but alas! I won't be any younger than I am now, and so I will have no more chance of getting

A DANCE

with her, than I had this year. Some of the other girls were amazingly unattractive, and they also did as I gaze upon from afar, although I doubt not but what they would have gladly pranced through "The Flowers of Edinburgh" or the "Pas de Quatre" with one who, twenty years ago, was known by his coolies, in Rangala, as the *Kelavan dorai.* Some of my own past time partners were looking younger than ever, although approaching the dangerous and susceptible age of sixty, when a woman really begins to need looking after; But, let me change the subject lest, like King David, in my haste I might say things not palatable to my venerable contemporaries. Some of those gay old girls tootled on the piano themselves, and added much to the enjoyment of the evening. Several clergymen also took part in the entertainment, both with songs and speeches, and, as they put on no frills but were plain genial speakers, they went well with the audience. It is the parson whose oratory is pure pulpit oratory, of the unmistakable kirk type, that goes far to depress an audience at such an entertainment as this was, and we rejoiced that no such parson had been able to pass the door keeper. Unstinted applause was the order of the day, and I always think there is something intensely inspiriting to a nervous performer in the thump of a heavy stick or the clapping of a pair of large hands.

Easter brings with it a great boom in

SCHOLASTIC MATTERS,

the election of members of school boards being on the tapis, and so the public have had, at this time, the opportunity placed in their power of inflicting one worse degradation on a man than making him a Parish Councillor. They can make him a member of a School Board. Just as a Cardinal is made Pope because he is old, infirm and imbecile, so a member of a School Board is made such, because he is either worse educated or more wanting in common sense than his neighbours, and thus the only people who can be persuaded to stand for the doubtful honour of being made members of School Boards are clergymen and idlers, with a sprinkling of the less educated farmers, whose minds are thoroughly parochial, and who have sons old enough to look after the work at home, whilst they sit in solemn state, making fools of themselves as members of a Board that dare do nothing of their own free will, but who lie under the heel of a despotic educational visiting agent. The British Isles, now-a-days, seem to be dotted over with school buildings, and inhabited only by members of School Boards and school teachers, the latter a most useless class of girls, of electro-plate culture,—a process which throws a brilliant film of education over a foundation of ignorance, and who would be far more useful in the world if they had some slight knowledge of clear starching and pie-making. To see a teacher of the old school type is a rare thing indeed, and such an one would be pointed out, much in the same way as would be the sole survivor of the Balaclava charge or the last of the Mohicans. These triennial elections always remind me of the time when people paid no taxes for freely educating those who wished to remain ignorant. Oh! happy time. Oh! for the days that used to be. Oh! the dear dead past! The columns of the Agricultural Press have lately been crowded with questions and answers on the subject of "Gowk aits," the consensus of opinion being that these are oats sown on or after the first of April—that is gowk's day.—Farmers who take no trouble to observe things connected with their work, but go on, year by year, believing in old sayings and silly theories, dread being compelled, by a backward spring, to sow oats later than the first of April, as they are sure to be great sufferers thereby. This, however, is but a wild idea of our forefathers, and, as an ounce of practice is worth a pound of theory, I may mention that I seldom finish sowing before the 23rd of April; and yet I am generally about the first to begin harvesting in the district. On one occasion I sowed a field on the 3rd of May, and it was the first cut in the neighbourhood, and gave me the heaviest crop I have had in Buchan. So much for believing implicitly in old sayings.

THE CROW

—the farmers greatest enemy—is now busily engaged in building up rookeries wherever any one is foolish enough to grant him permission to do so. When I leased this farm the trees around my house were laden with nests, and the noise made by the colony, night and day, was deafening, presently the destructive wretches took to digging up my potato seed as fast as it was put in the ground, and I bore with them, because of the aristocratic associations connected with a rookery. When they killed my chickens and pulled my young turnips up by the acre I still stayed my hand; but when they took to killing my lambs, by digging out the poor creatures eyes, then I arose in my might and sent for all the boys in the district, who plumed themselves on their climbing abilities, and had every nest torn down, and this—my lead—has been followed by every owner of a rookery in the district, except one, and he, it is hoped, may yet learn wisdom, and clear his lot out also. Crows are very suspicious of man, yet, strange to say, they never live far from him; and it is said of them that they prefer the neighbourhood of aristocratic families. A story is told of an ancient mansion having changed hands, and a report reached the crows that the new proprietor bore the name of Smith, so the colony determined to depart. One curious bird, however, examined the labels on the luggage, and, finding the name spelt with a *y*, the crows unanimously agreed to postpone their departure. I don't mean to say that every rookery I have seen was owned by a family of blue-blood or of Vere-de-Vere extraction; some of these proprietors, indeed, were "too proud to care from whence they came," and, perhaps, it was just as well, for their pedigrees would not bear looking into.

THE TEA CLEARING HOUSE COMMITTEE have intimated their intention to increase the discount allowance on charges from ten per cent, to fifteen per cent on all rates, except that for "bulking and taring" which was reduced from March 1st last.—*Grocers' Journal* May 5.

NOTES ON THE CRUDE RUBBER INTEREST.

RUBBER PLANTING IN THE WEST INDIES.—At the second West Indian agricultural conference held on January 6 in Barbados, the president, Dr. Daniel Morris, C.M.G., who is the commissioner of the imperial department of agriculture for the West Indies, said in his inaugural address: "A regular plantation of India-rubber trees, the first in the West Indies, is being established at Tobago by Mr. Esmè Howard. The species selected is Central American rubber tree, known locally as 'ule' or 'caucho' (*Castilloa elastica*). It was recently reported that this tree was found wild in Cuba. This is evidently an error. Rubber trees are being planted in small plantations and in isolated groups also in Trinidad and Jamaica. The cultivation could be successfully established in some localities in British Guiana where, already, one or more valuable species are found in a wild state."

RUBBER FROM GERMAN AFRICA.—The exports of India-rubber from two of the German colonies in Africa have been as follows in the last two fiscal years, in English pounds:

	1897-98.	1898-99.
Togo	194,918	389,530
Kamerun ...	969,738	1,328,536

The rubber exported from Kamerun was valued at 1,177,715 marks in 1897-98 and 1,928,080 marks in 1898-99.

RUBBER PLANTING IN COSTA RICA.—Mention has been made from time to time in the *India Rubber World* of the experiments in India-rubber planting made in Costa Rica by Minor C. Keith, a former resident of Brooklyn, N. Y., and now first vice president of the United Fruit Co., who are interested so largely in the banana trade in Central America. Mr. Leith has more than once taken the liberal cash prizes awarded by the Costa Rican government to promote the planting of rubber in that republic. The *India Rubber World*, in response to an inquiry, has received a letter from John M. Keith, manager of the Costa Rica division of the United Fruit Co., from which the following extract is taken:

"We have a large number of rubber trees on our properties that have actually been planted and are in a most flourishing condition. The only difficulty that presents itself, in the way of securing lucrative results, is the impossibility of preventing poaching. We planted our trees when rubber was still at a low price, and scattered them throughout all our farms, and the greater part of the rubber yield has since been stolen, although every year we collect a considerable quantity. I have no doubt, however, that should any one plant thickly on land that could be easily guarded, the difficulty above referred to could be overcome. As you are aware, the greater part of the rubber in these parts is cut on government (or unclaimed) lands. Consequently the rubber cutters, who are, as a rule, a lawless set of men, disregard any proprietary rights to a rubber tree anywhere."

A RUBBER PLANTATION IN MEXICO.—La Zacualpa Rubber Plantation Co., a California corporation with a plantation at Tapachula, in the state of Chiapas, Mexico, where O. H. Harrison is resident director, have favored the *India Rubber World* with considerable printed matter of interest in relation to the results of their work and their prospects. A recent pamphlet contains a copy of a letter by Percy Christy, a son of Thomas Christy, of London, recounting his impressions on visiting the plantation. It appears that the former owner of the estate, José M. Pelaez, for several years collected and sold a considerable amount of rubber from the native trees found there. Mr. Christy, in his letter, mentions the native trees as still standing, besides which he was shown a number of trees represented to him as having been planted ten years ago. He was told that these were about 5,000 in number and he found them "most healthy looking trees, with a trunk diameter of 10 to 12 inches; these trees have been tapped for some years, and in talking it over with some of the Indian rubber gatherers, they assured me that each of these trees would produce from 2 to 3 pounds per year. . . . From this we visited a plantation of last year's planting, entirely in the open and without shade, and these all looked strong and healthy. I understand that there are 30,000; also I noticed that along the fencing of the property rubber trees had been planted. This idea pleased me exceedingly, as it will be a saving of labor, as the trees will serve as posts as well as being a source of profit.

THE "THIRTY COMMITTEE."

Minutes of proceedings of a meeting of the "Thirty Committee" held at the Victoria Commemoration Buildings, Kandy, on Saturday, the 12th day of May, at half-past seven o'clock (7·30 a. m.) in the morning. Present:—Mr. Edward Rosling (Chairman) Mr. A. Philip (Secretary), Hon. Mr. J. N. Campbell, Messrs. Stanley Bois, J. B. Coles, G. H. Alston, R. A. Galton, A. J. Denison, Hugh B Roberts, T. C. Huxley, J. A. Burmester, G. K. Deaker, Joseph Fraser, W. D. Gibbon, A. Melville White, Edgar Turner, James Westland, James Ryan and A. C. Kingsford.

The notice calling the meeting was read. The Minutes of proceedings of a meeting of the "Thirty Committee" held at Kandy, on Saturday, the 17th day of March, 1900, were submitted for confirmation. Resolved:—"That they be and they hereby are confirmed." Read letter from Messrs. Capper & Sons.

CORRESPONDENCE &C. CIRCULATED.

CEYLON-TEA IN AMERICA.

Letters from Mr. William Mackenzie to Mr. Lane, dated 21st Feb., Mr. Larkin to Mr. Mackenzie, 17th Feb., *Journal of Commerce and Commercial Bulletin* to Mr. Mackenzie, do. Mr. Wm. Mackenzie to Mr. Lane, 25th Feb., do. 27th, 2nd March and do. 6th. Mr. P. C. Larkin to Mr. Wm. Mackenzie, 27th Feb., Mr. Wm. Mackenzie to Mr. Rosling 5th April. Table of revised tea statistics, Mr. Wm. Mackenzie to Secretary, 15th April.

UNIVERSAL INTERNATIONAL EHIBITION TO BE HELD AT PARIS, 1900.

Letters from Mr. Renton to Mr. Rosling, dated 9th March, 23rd March, 6th April.

CEYLON TEA (NEW MARKETS) FUND.

Sketch statement giving the yearly totals expended in each country from the commencement of operations as per abstracts to 31st December, 1899. Sketch memo. showing credits opened, payments made, and available balances as at 30th April.

MEMBERS OF COMMITTEE.

Read letter from Mr. W. Saunders stating that as he is leaving for England he tenders the resignation of his seat on the "Thirty Committee." Read letter from the Secretary, Ceylon Chamber of Commerce, intimating that Messrs. G. B. Leechman, G. F. Traill, and H. Tarrant, had been elected members of the "Thirty Committee" in place of Messrs. J. A. Henderson, J. H. Renton and E. M. Shattock. The members representing the Chamber at present are Messrs. G. B Leechman, E. C. Skrine, G. F. Traill, G. H. Alston, H. Tarrant and Stanley Bois. Read letter from Mr. George Kent Deaker. Read letter from Mr. Gordon Pyper resigning his seat on the Committee as he is leaving Ceylon. Resolved:—"That Messrs. E. H. Hutchinson and Robert Morison be elected members of the 'Thirty Committee' vice Messrs. W. Saunders and Gordon Pyper."

MINUTES OF PROCEEDINGS.

Read letter from Government acknowledging copy of minutes of proceedings of a meeting of the "Thirty Committee" held at Kandy on Saturday, the 20th January, 1900.

FINANCES.

Submitted letters from the Treasurer of the Colony. Submitted memo. showing credits payable and available balances as at 30th April, 1900.

CEYLON TEA (NEW MARKETS) FUND.

Considered various memoranda showing the position of the Fund. Submitted statement giving the yearly totals expended in each country from the commencement of operations. Read letters from the National Bank of India, Limited, Colombo. Submitted sketch summary of receipts and expenditure Ceylon Tea (New Markets) Fund as per audited abstracts from 1894 to 31st December 1899. Resolved :—"That it be appended to the minutes."

COMMISSIONER ON THE CONTINENT OF EUROPE.

Read letter from Mr. J. H. Renton, dated Paris, 20th April, received since the circulation of previous correspondence. Read letter dated, Paris 9th March, *re* finance, and a consignment of tea regarding which he had been making enquiries.

PARIS INTERNATIONAL EXHIBITION, 1900.

Read letters from Messrs. Lipton, Limited, and submitted connected correspondence.

CEYLON TEA IN AMERICA.

Read lette from Mr. Mackenzie, dated London 17th April, received since the circulation of earlier correspondence. Submitted letters from the National Bank of India, Limited, and connected papers.

CEYLON GREEN TEAS.

Read correspondence. Intimated that payments had been made as under:—

March 1900	4,700 lb.	Dewalakanda Green Teas	R470·00
Do.	8,175 ,,	Brunswick	817·50
April 1900	668 ,,	Laymastotte do	66·80
Do.	5,240 ,,	Ceylon Green Teas per Whittall & Co.	524·00
Do.	4,470 ,,	do.	447·00
May 1900	6,960 ,,	Brunswick Green Teas	696·00
Do.	5,450 ,,	Ceylon Green Teas per Whittall & Co.	545·00
Do.	4,906 ,,	Dewalakanda Green Teas	490·60
add total as per previous statement	110,089 lb.		11,008·90
	150,658 lb.		R15,065·80

Leaving the balance of R14,934·20 still available at date. Submitted printed card giving the process of the manufacture of green tea on Brunswick estate as drawn up and approved by Mr. A. E. Wright. Resolved :—"That copies be made available on application to the Secretary." Considered matters relating to the grant for green teas. Resolved :—"That the question of continuing the grant on Ceylon green teas be considered at next meeting of the 'Thirty Committee.'"

PROTECTION OF CEYLON TEAS IN PACKETS.

Discussed the present position of this question. Resolved :—"That reference be made to the Ceylon Chamber of Commerce *re* the practice of transhipment of Travancore teas at Colombo to London and Australia."

REPORT ON CEYLON TEA SOILS BY MR. KELWAY BAMBER.

Read letters from Government and Messrs Capper & Sons. Resolved :—"That the sanction of the Governor in Executive Council be obtained to an appropriation of R800 for printing and circulating the Report." The "Thirty Committee" then adjourned.

A. PHILIP,
Secretary to the "Thirty Committee."

SKETCH SUMMARY OF RECEIPTS AND EXPENDITURE CEYLON TEA (NEW MARKETS) FUND.

(As per audited Abstracts from 1894 to 31st December, 1899.)

RECEIPTS.

	1894 to 31st December 1897 as per statement previously published. (12th July, 1893.	1898.	1899.	Total.
	R. c.	R. c.	R. c.	R. c.
Ceylon Tea (New Markets) Fund	684591·29	241074·86	255693 50	1181359·65
Ceylon Tea Fund	11428·93	—	—	11428·93
Interest	74 2 84	2056 72	1725·83	11185·39
Ceylon Tea in Russia (Refund)	—	583·11	—	583·11
Coolgardie Exhibition. 1899.	—	—	2540·86	2540 86
Coolgardie Suspense a/ (Refd:)	—	—	790·56	790·56
Telegrams (Refund)	—	—	186·30	186·30
Wm. Mackenzie, Rep: in America	—	32·19	—	32·19
			Rs.	1,208,106 99

EXPENDITURE.

AMERICA				
Wm. Mackenze	467481·55	194684·96	149695·60	811862·11
Canada ...	—	7500·00	—	7500·00
Miscellaneous..	8518 31	—	—	8518·31
Presentation to Adml Dewey	—	—	1451 60	1451·60
Russia ...	61203·9	5580 62	40930·19	107714 20
Germany ...	—	18194·08	17310 84	35504·92
Coolgardie Exhibition ...	—	26 00	9755·01	9781·01
do·Suspence a/c ...		—	790·56	790·56
Austria & Hungary ...	3476·81	4935·66	—	8412·47
Continent of Europe ...	7 52·76	—	—	7852 76
Belgium & Holland ..	1005·32	3084 33	—	4089·65
Norway ...	967·29	1174 31	1009·24	3150·84
Sweden ...	4093·81	—	332·41	4426·22
Switzerland ...	3590·94	—	—	3590·94
Transvaal ...	116·59	—	—	116·59
Agricultural Chemist ...	—	3 50·00	11250·00	15000·00
Ceylon Green Teas ...	—	1330·20	8632·70	9962·90
Times of Ceylon Art Supplement	—	—	650.00	650·00
Bamber's Dietetic Pamphlet	—	—	460 35	460·35
Secretariat & Management ...	10000.00	6000·00	6000 00	22000·00
Miscllaneous ...	2205·48	844·25	2075·00	5124·73
Stationery ...	400·04	61 68	551·90	1567.62
Telegrams ...	372·20	92 30	244·80	709·30
Printing ...	1356·91	569·22	703·62	2629·55
Charges &c ...	2330·94	698 15	675 87	3704·90
Auditor ...	—	100 00	100 00	200·00
Petty Cash ...	—	—	—	94·44
National Bank of India Ltd. ...	—	—	—	31240·96
			Rs.	1,208,106,99

SALE OF AN ESTATE.

We hear from Gampola that Messrs. Walker, Sons & Co., Ld., have sold the Bodawa estate for R25,000 to Mr. J. C. de Silva who owns a property adjoining it. Bodawa belonged to the bankrupt estate of Mr. de Vos. It is 122 acres with 50 in cultivation, tea, etc.

PRODUCE AND PLANTING.

INDIAN TEA CROPS.—"In commenting on the prospects for Indian tea a twelvemonth ago, we said that 'the more remunerative prices now current cannot fail to stimulate the Indian planters to still greater exertions' than in previous years, and the truth of this prediction is seen," says *The Grocer*, "in a materially larger production during 1899-1900 than the most sanguine of importers and dealers had anticipated. The particulars as just given by the Indian Tea Association (Calcutta and London) show that the actual yield of the crop for the season now drawing to a close reached the unprecedented total of 174,856,400 lb. (details of which are inserted in our usual market report), which was 21,956,200 lb. in excess of that in 1898 99, when a crop of 152,900,200 lb. was raised. For years past there has been an almost continuous expansion in the cultivation and importation of Indian tea. True, the crops in 1896-97 and 1897-98 were of similar extent, say a little over 148,000,000 lb., but that in the following season (1898 99) was increased to 152,900,000 lb.; and when we call to mind the fact that the entire crop in 1895 96 yielded not more than 135,479,000 lb., and also that in 1894-95 it was only about 127,100,000 lb., it is quite evident that remarkable progress has been made in the British tea industry of our Indian Empire within a comparatively short period."

DETAILS.—"Out of the above total of 174,856,400 lb., as representing what may now be considered as last season's crop, it is interesting to note that the amount reserved exclusively for shipment from Calcutta to Great Britain was scarcely, if at all, less than 149,000,000 lb., against 135,500,000 lb. 1898 99, and here alone appears an increase of 13,500.000 lb; all of which statements conclusively prove, if further proof were necessary the full magnitude of the scale on which the general operations in Indian-grown tea are conducted. In touching specially upon the character and outturn of the late season's crop, it may be remarked," says the journal we quote, "that its rapid augmentation was mainly due to the much more favourable weather experienced in the Sylhet and Cachar districts—the very districts where the drought was most severely felt in 1898—and likewise to the new system of coarser plucking, so that these two causes have combined to produce a larger make of common and inferior teas than has been known in any former seasons. Although the proportion of really fine and choice qualities has been less than usual, the 1899-1900 crop has undoubtedly been a very useful one in many respects to blenders and consumers, consisting of a desirable kind of leaf, of strength and colour in cup, with richness and flavour amongst the more delicate kinds sent from the Southern parts of India; and prices on the whole have been at a reasonable level for all parties. Alluding to the recent advance of 2d in the tea duty to 6d per lb, Messrs. George White and Co., brokers, observe that 'its effect is difficult to foresee; but should it lead to the extended use of medium and fine sorts, the former of which have been unduly depressed for months past, it will be a boon to many tea planters, both in India and Ceylon,' adding that 'the prospects, therefore, seem favourable to expansion in the sale of good liquoring descriptions, while that for very common may be partially abandoned, and the prevailing lowest retail price be 1s 4d per lb. If the purveyors to the public can induce their customers to purchase a slightly better blend than they have lately perhaps been accustomed to they would not only benefit themselves, but also the trade generally.'"—*Home and Colonial Mail*, April 13.

QUEENSLAND PRODUCTION FOR EXHIBITION.

The Queensland Department of Agriculture has prepared and shipped to the care of the Agent-General in London six boxes of specimens of the produce of the colony for exhibition in the museums at Stockholm and Christiania—three boxes to each place. The exhibits have been applied for by the authorities in the cities named, and the samples comprising them are made up in small bottles. There are included specimens of wool, sugar, wheat of various varieties, cornflour, arrowroot, sorghums, and millets, earth nuts, beans of different kinds, maize, and other grains. They have all been grown in Queensland, principally on the experimental farms. The department has also nearly completed the preparation of an exhibit for use in England by Mr. Randall, the Immigrant Agent. The hay is now awaited, and when that is secured the butter and cheese to be sent from the Gatton Agricultural College will be at once sent in and the exhibit will be complete. It is fully expected that it will be one well worthy of the colony. Some splendid samples of wheat and barley have been procured, and among the many articles included there will be preserved fruits, jams, jellies, candied fruits and others. The hay will be made into small bales, and will include oaten, wheaten, rye, lucerne and panicum. It may be mentioned that Queensland is the only colony apparently which is taking this means of placing the colony before people in Great Britain.—*Sydney Mail* April 14.

MANUFACTURE OF CRUDE QUININE.

The *Batavia Nbl.* learns from a well-informed quarter that two of the principal Java cinchona planters propose to set up on their grounds factories for the production of crude sulphate of quinine, which will subsequently be refined at the Bandong works. It is expected that this will result in an increased profit—quite twenty-five per cent—over that obtained from the sale of the bark in Amsterdam. The most important point, however, appears to be that it would have the effect of withdrawing something like ten or twelve tons of quinine from the European market, and that other planters will probably, in their own interest, follow the example, and in course of time erect similar works. Another advantage in connection with the proposed works is that inferior bark with one and half or two per cent of quinine-content, which is now either sold at a loss or simply thrown away, can then also be worked at a profit. It is stated that such an installation is not only inexpensive (costing not more than about £500 to £800 for a plant capable of dealing with five to ten cwt of bark per day), but moreover, the work is very simple and requires no great skill or experience. These details are based upon data obtained from similar works which have already been in operation for three years, and in which bark is used of such low quality that it would not pay the expense of shipment to Europe.

CURING OF LIBERIAN COFFEE.

One of the drawbacks to the use of Liberian Coffee has been a strong unpleasant taste, and various remedies have been suggested.

It has now been successfully overcome on the Borneo Coffee Co.'s estate in Marudu Bay by washing the coffee after pulping and before fermenting. The washed coffee is in this way cleaned from all the minute bits of pulp which doubtless imparted an unpleasant taste and before being placed in the fermenting cistern it is thrown into large baskets—"coal baskets"—for a few minutes to allow the surplus water to drain off and is then fermented in a comparatively dry state. To increase the heat, sacks are placed on the top of the coffee and after some hours the top layer is turned in below so as to ferment the parcel equally. Liberian Coffee, properly cured has a splendid flavour which is well known by the trade, who value it highly owing to the amount of chicory it can assimilate. As an after dinner coffee nothing comes up to pure Liberian Coffee if properly cured.—*British North Borneo Herald.*

A BATCH OF CEYLON TEA COMPANIES RESULTS.

(*Investors' Review*, April 21st.)

The reports of the smaller Ceylon Tea Companies so far published show

MUCH MORE SATISFACTORY RESULTS

for 1899 than for the preceding year. Generally speaking, there is a good deal of variation in the experience of these lesser companies, their plucking area being so small that they are more likely to be influenced severely by accidents and climatic conditions than the larger concerns, whose wide area enables the principle of averages to come into stronger play. On this occasion, however, the trend has been almost entirely in one direction, and that favourable, as the following figures will show :—

	Plucking Area.		Crop.		Price per lb.	
	1998.	1899.	1898	1899.	1893.	1899.
	acres	acres.	lb.	lb.	d.	d.
Bandarapola	478	576	395,270	524,259	6⅛	6⅝
Burnside	*	1,134	356,455	378,608	6¾	7 3-16
Ederapolla	853	996	447,026	466,149	6⅝	6 15-16
Highland	603	585	212,415	259,233	9	8½
Kelani Valley	1,200	1,211	578,169	575,255	6½	7
Panawal	577	590	293,933	334,922	6⅜	6½
Poonagalla	—	1,180	261,164	302,614	8 1-16	7½
Portmore	474	483	241,686	242,740	9⅞	8⅞
Yatiyantota	2,249	2,376	1,135,794	1,343,387	5⅜†	5 11-15†

* Not stated. † Net prices ; in othere cases prices are gross sale prices.

According to this statement, almost all the companies showed a much larger output, partly owing to larger plucking areas and partly to a better yield per acre. Movements in the average prices obtained varied to a greater extent, but only three out of the nine companies saw their average prices reduced, and in two of these cases the reduction in price was more than compensated by the increased quantity produced. We ought to lay stress on the fact that the prices obtained by the

YATIYANTOTA COMPANY

are strictly net prices, as that company only returns its average price in that form in consequence of the fact that it disposes of a large part of its crop in Colombo. Freight, dock charges, insurances, and other forms expenditure are not included in this price, and this represents quite ⅜d to ½d per lb. at the lowest estimate. Little has been heard of the Yatiyantota Company until lately, but it promises to become an important concern later on. With 2,990 acres under plant, its revenue last year had to bear the cost of 636 acres not in full bearing and yet it fully earned a dividend of 7 per per cent, although its selling price was so low.

THE SECRET OF ITS PROSPERITY

is to be found in its low cost of production, which did not exceed 3½d per lb last year, which if ⅞d per lb. is added for London charges, would bring up the cost of production to 4⅜d per lb., a figure that should make many of the older managed concerns squirm in their hide-bound system of management.

We are particularly glad to be able to note that almost with one accord these

SMALL CEYLON COMPANIES

have taken the opportunity presented by larger profits to increase their accumulations, a statement borne out by the following table :—

	Net Profits.		Sums put to Depreciation, &c.		Dividend.	
	1898.	1898.	1898.	1899.	1898.	1899.
	£	£	£	£	per ct.	per ct.
Bandarapola	1,488	3,924	432	1,823	5	10
Burnside	395	1,276	43	300	2	5
Ederapolla	2,068	2,921	793	800	5	8
Highland	1,879	3,006	125	766	5½	7
Kelani Valley	1,478	2,167	541	291	5	10
Panawal	1,814	3,208	750	1,135	4	10
Poonagalla	820	902	—	—	4	5
Portmore	5,405	4,559	489	159	12	11
Yatiyantota	7,666	12,117	1,639	3,200	4	7

In this it will be noted that all the companies excepting one—the Portmore—pay higher dividends, and that company, which produces a high-priced tea for Ceylon, suffered severely from a reduction in its average price, but even then its distribution is at the high rate of 11 per cent. Its attention, however, to depreciation and reserve was very slight. One other company, the Kelani Valley, did less in this respect, although it doubled its dividend. But it is relatively a strong company having a reserve of £4,500 invested outside the business. In other cases there is a most satisfactory

GROWTH IN THE SUMS PLACED TO RESERVE,

written off new extensions, or devoted to extinction of buildings and machinery accounts. This goes to show that the experience of the last few years has not been without its lesson to the boards, and consequently we may hear less of fluctuating dividends in the future. The level of the dividends declared is really good, and if profits can only be kept up to the record of last year, shareholders should not have much to grumble about. These Ceylon companies have certainly met the rise in exchange

FAR BETTER THAN THE INDIAN TEA COMPANIES.

Apart from one or two notorious examples, the companies were not usually overcapitalised, as many of the Indian companies have been ; and then there is less leakage in profits through poor management and exaggerated agency charges. The low charges of the Colombo agents is all the more remarkable, as their control is much more real than that of the Calcutta agents over Indian plantations. The distance from Colombo to the plantations is less, and this probably accounts for the manner in which the gardens are regularly visited by representatives of the agency firms. There are

TWO WEAKNESSES IN THE FINANCIAL MANAGEMENT

of these small Ceylon companies that must be mentioned before be leave the subject. The first is the large proportion of debenture capital which they have issued. Debenture apital may seem a cheap way of financing

a concern when everything is prosperous, but in a plantation industry this seldom occurs, while now and then one finds everything unpropitious. Debenture interest has to be met all the same, unless the company is prepared to lose its property, and the drain thus experienced sometimes leads to the shareholders receiving on the average lower distributions than the debenture holders. Shareholders should therefore impress upon their boards the need of reducing these debenture issues as quickly as possible. The other matter is one we have grumbled about before, viz., the manner in which profits are anticipated. Take, for instance, the Ederapolla Tea Company; its balance-sheet last December showed that it owed £4,200 on bills payable, £295 to creditors, and proposed to distribute £1,275 in dividend, against which it held £416 in cash, £2,952 of unrealised tea, and had investments and sundry debtors amounting to £1,544. Without drawing bills as fast as its tea is shipped, this company would have no funds out of which to distribute the profits it claims to have made, so that it is always eating its cake before it is fully baked. The same remark applies to many others, and the policy is the direct progenitor of the debenture issues.

MAYFIELD DIMBULLA TEA COMPANY.

Report of the Directors of the Mayfield (Dimbula) Tea Company of Ceylon, Ltd., to be submitted at the third annual general meeting, to be held at the Offices of the Company, No. 9, Mincing Lane, E.C., at 12-30 o'clock, on Tuesday, May 8.

The Directors herewith beg to submit their third annual report and balance sheet for the year ending 31st December, 1899.

The nett yield of Tea from the estates for the twelve months ending the 31st of December last was 459,098 lb. or an increase of 59,639 lb. over last year, which sold at an average price of 8·02d in the case of Mayfield, and 7·12d. in the case of Nicholaoya, or a combined average of 7·62d. per pound gross.

The nett cardamon crop was short of estimate by 1,406 lb. being 3,594 lb. as against 5,000 lb. estimated for, and sold at an average of 2s. 2d. per pound gross.

The profit and loss account, after providing for general expenses, writing off the remaining one-third of the preliminary charges, and charging all expenditure on capital account to revenue, shows a profit of £3,608 1s.; this, together with the balance brought forward from 1898 of £29 18s 1d., makes a total of £3,637 19s. 1d.

Of this, the preference dividend for 12 months ending 31st December, 1899, has absorbed £1,980, leaving a balance of £1,657 19s. 1d. still to be divided.

It is now proposed to pay a dividend of 5 per cent. on the ordinary capital, amounting to £1,531, leaving a balance of £126 19s. 1d. to be carried forward, which is subject to superintendent's commission for the year 1899.

The estates are reported to be in a greatly improved condition, and a further increase in crop may be looked for during the present season. Great credit is due to Mr. Cantlay and the staff in Ceylon for their conduct of the Company's affairs

Under clause 86 of the articles of Association of the Company, Mr. F W Jamieson one of the Directors, retires and, being eligible, offers himself for re-election.

Mr. J F Kane MacGwire, Chartered Accountant, also offers himself for re-election. JAMES SINCLAIR, Chairman.

No 9, Mincing Lane,
London, E.C., April 23rd, 1900.

CEYLON TEA COMPANIES:

A REVIEW OF THE BEST.

(*Financial Times*, May 4th.)

Most of the Ceylon Tea Companies which make up their accounts to December have now issued their reports, and under the circumstances they must be considered surprisingly good. There are one or two companies, such as the Consolidated Estates of Ceylon, the Dimbula Valley and the New Dimbula, whose financial year ends in June, the reports being consequently published in the autumn, but the majority adopt the Indian system, and follow the calendar year, although their reports are, as a rule, brought out considerably in advance of those of the Indian companies. It is not too much to say that even experts were agreeably disappointed by the results shown for 1899. The year was by no means altogether a favourable one as regards prices, particularly for high-class teas, and the fact that several of the companies have been able to increase their dividends, while adding to their allowances for reserve and depreciation, must be attributed mainly to more careful and economical management, which has led to savings in working charges. A general view of the results obtained by the leading companies during the year is presented in the subjoined table:—

Company.	Net Profit.		Appropriations for Reserve and Depreciation.		Dividend per cent.	
	1898.	1899.	1898.	1899.	1898.	1899.
	£	£	£	£	pc.	pc.
Ceylon Tea Plantations	41,380	43,664	10,000	10,000	15	18
Eastern Produce and Estates	27,913	28,615	nil	nil	7	7
Standard Tea Company	9,774	10,780	1,000	1,700	15	15
Nuwara Eliya	15,667	17,290	nil	2,300	6	7
Scottish Ceylon Tea	4,235	6,960	nil	1,400	10	12
Alliance Tea	5,205	7,900	300	1,000	7	8
Yatiyantota	7,666	12,120	1,000	1,000	4	7

It will be seen at once that out of the seven companies included in our list five have increased their distributions and four have increased their appropriations for reserve and depreciation. Taking the companies seriatim, we find the first in our table—the Ceylon Tea Plantations—occupying a very strong financial position. It has a reserve fund of £100,000, mainly accumulated during the past eleven years. From 1887 to 1898 inclusive it has paid regular 15 per cent. dividends, while for last year the distribution was raised to 18 per cent., and the carry forward amounted to £6,356. Adequate amounts have also been set apart out of revenue for depreciation the appropriations during the past three years being £5,000 per annum. The Company has no Debentures and the issued capital is only £248,460, of which £81,080 is in Seven per Cent. Preference and £167,380 in Ordinary shares. A portion of the reserve is invested in coconut plantations, which

have proved very remunerative, the sales last year bringing in £17,591. The Company is to be commended for publishing with its report a tabular statement showing the results of working for thirteen years, a plan which might with advantage be adopted by other companies. Naturally, the £10 Ordinary shares stand at a considerable premium, the present price being about 26¼, but the yield at this figure is still 6⅝ per cent.

The Eastern Produce and Estates Company, the next on our list, cannot boast such a brilliant record, but within the last seven years it has gradually increased its dividend, and for three years past the shares have been on a seven per cent basis. The reserve fund, it is true, appears small, being only £25,000 for an issued share capital of £299,800, and it has not been added to for some years. But the Company has reduced its Debentures debt from £195,200 to 80,000, the amount so applied last year being £7,500. In reality, therefore, it has accumulated a considerable reserve fund, and it should be noted that when the Debentures are reduced to a total of £50,000 the sinking fund may cease. The balance carried forward from last year is the very considerable one of £9,800. A reference to our usual table of Indian and Ceylon Tea Planting Companies, shews that the shares can be purchased to yield about 6¾ per cent. The Standard Tea Company, our next selection, has an excellent record as a dividend payer, the distributions rising from 10 per cent. in 1893 and 12½ per cent, in 1894 to a level of 15 per cent. in 1896, which has been maintained ever since. The Company, though not paying more for last year, has set aside £700 additional for reserve and depreciation, and slightly increased the carry forward The paid-up capital is small, amounting to only £59,500 so that the reserve, which now reaches £11,000, is not altogether inadequate. Some objection may be taken to the fact that the majority of the £10 shares and those the most freely dealt in, are only £6 paid. But this state of things has its advantages, since, owing to this liability on the shares, the Company has no prior charges, and is able to borrow on very favourable terms. The good results shown by last year's working are the more creditable, as the Company produces a considerable quantity of fine teas, and the prices obtained for such qualities were, on the whole, unfavourable. The fourth concern on our list, the Nuwara Eliya, is rather heavily capitalised, having a subscribed share capital of £200,000, in addition to £30,000 of Debentures. It is a comparatively new undertaking, only registered in 1895, and so far has accumulated no reserve fund. The Directors, however, have been conservative in their distributions, and have only raised the dividend to 7 per cent. after maintaining it at 6 per cent. for the previous three years, while £2,599 is this time carried forward. The Company produces tea of fairly high average quality, and the report sets forth the profits made by the various estates very clearly. On the whole, the Nuwara, notwithstanding its capitalisation, may be said to occupy a sound position.

The Scottish Ceylon Company shows a large increase in profits last year, and after distributing 10 per cent. dividends for the past few years is now enabled to pay 12 per cent. It has also written off £1,000 from the estates account and £402 from capital expenditure, which was not done in the previous year. The issued share capital of this concern is only 50,000, of which £9,000 is in Seven Per Cent. Preference and the balance in Ordinary shares, and there are no Debentures. The reserve fund is £7,000. This Company made a very considerable stride forward last year, and the shareholders are to be congratulated on the improved position. The weak point about the Alliance Tea Company is that it has not succeeded in putting anything to reserve except a sum of £4,600, representing the premiums received on shares and Debentures. The issued share capital, it is true, is only £65,250, but the Debenture debt is close upon £45,000. Possibly instead of increasing the dividend from 7 to 8 per cent last year, it might have been more advantageous to have set apart something towards the formation of a reserve fund. However the Directors write off £1,000 for depreciation and carry forward £2,180, so it cannot be said that they have divided the profits absolutely up to the hilt. Our last Company, the Yatiyantota, is quite a young concern, only dating back to the end of 1896. Commenceing with a 2 per cent dividend for 1897, it increased its distribution to 4 per cent for 1898, and pays 7 per cent for the past year. The property consists of lowland gardens, producing large quantities of lower-grade teas, and the Company benefited considerably last year by the high prices ruling for common teas, especially in the spring. That cannot, of course, always be the case, but an excellent feature of the working of this undertaking is the extraordinarily low cost of production, so that even on a less favourable market the Company should still be able to realise its produce at a good profit. The Company's issued share capital is £135,000, of which £45,000 consists of six per cent. Preference shares. The Ordinary share capital was issued at a high premium, so that although the Company has from this source a reserve of £45,000, it was provided by the shareholders themselves, and was not obtained out of revenue. Speaking generally of the Tea share market, it may be said that although there has been a moderate recovery from the lowest prices touched since the boom time, there is still a fair margin for further improvement, and many of the good shares, such as those indicated, are worth attention. As regards the future, the horizon is not quite free from the cloud of over-production, yet it is brightening. All large extensions of gardens are now practically stopped, while the foreign markets for Indian and Ceylon teas are steadily developing year by year. The Indian exchange question is now practically eliminated; producers have become habituated to a stable rupee and one element of uncertainty is thus abolished. The Ceylon Companies, as a whole, in addition to those dealt with the above, show excellent results for the past year, and they are the more creditable as they were achieved under conditions by no means entirely favourable.

UNDEVELOPED TIMBER WEALTH.—The *Bangkok Times*, in dwelling upon the restricted output of teak timber in Siam, points out that there are immense quantities of hard woods in the forests of the Siamese Malay Peninsula. But there are considerable difficulties in the way of obtaining leases to work these forests. Another difficulty is the uncertainty regarding the amount of the transit tax to be levied on woods.

SCOTTISH CEYLON TEA COMPANY, LTD.

ANNUAL REPORT.

The Directors have now the pleasure to submit to the shareholders the Accounts and Balace-sheet for the 12 months ending 31st December, 1899.

	£ s. d.	£ s. d.
The net profits for the year amount to £6,959 6s 2d, to which has to be added £456 4s 7d brought forward from previous accounts, giving a total to be dealt with of ..		7,415 10 9
An Interim Dividend on the Ordinary Shares of 5 per cent (free of Income Tax) paid in September, 1899, absorbed ..	2,050 0 0	
Dividends on the 7 per cent Preference Shares have also been paid, amounting to ..	630 0 0	
It is now proposed to pay a Final Dividend on the Ordinary Shares of 7 per cent (free of Income Tax, making 12 per cent for the year ..	2,870 0 0	
To write off the Capital Expenditure incurred during 1899 ..	402 14 9	
To write further off Estates Account ..	1,000 0 0	
		6,952 14 9
Leaving a balance to carry forward to next account of		£462 16 0

The total crops secured from the Company's properties during the year amounted to 819,704 lb., being 28,704 lb. over the estimate, and 60,705 lb. more than the previous year's outturn, which the Directors consider a satisfactory inorease.

In addition to the foregoing, 121,716 lb. of tea were manufactured for others giving a total output from the Company's Factories for the year of 941,420 lb. made tea.

The average yield per bearing acre was 480 lb. against 445 lb. for 1898, the rate of exchange was 1s 4⅜d per Rupee, against 1s 4¼d, and the average prices realized in the London and Colombo markets respectively were 7·707d and 35 cents against 7·869d and 32 cents for the previous year.

No additions have been made to the Company's acreage, which remains unaltered at 1,963 acres, including 1,720 acres under tea cultivation.

The eylon Manager, Mr Kerr, who is now on his way home on short furlough, reports that all the ompany's estates are in good heart, and his estimates for the current year point to a continuance of satisfactory returns.

The Directors would again take this opportunity of recording their appreciaton of the services of the staffs, both in eylon and London.

In accordance with the articles of Association, Mr. G G Anderson retires from the Board, and, being cligible, offers himself for re-election.

Mr. J B Laurie, C.A., also offers himself for re-election as Auditor.

MAYFIELD (DIMBULA) TEA COMPANY OF CEYLON (LIMITED.)

ANNUAL REPORT.

The report for the year 1899 states that the profit and loss account, after providing for general expenses, writing off the remaining one-third of the preliminary charges, and charging all expenditure on capital account to revenue, shows a profit of £3,608. This, altogether with the balance brought forward, makes a total of £3,638. It is proposed to pay a dividend of 5 per cent on the ordinary capital, leaving a balance of £127 to be carried forward, which is subject to superintendent's commission for the year 1899.—London *Times*, April 30.

OUVAH COFFEE COMPANY, LIMITED.

ANNUAL REPORT.

Presented to the fifth ordinary general meeting of the Company at No. 5, Dowgate Hill, London, on Wednesday, the 16th May, at noon.

Since tea has become the staple product on our estates it has been found that it will be more convenient to terminate the financial year on the 31st December in place of on the 31st July. Accounts are now therefore presented for a period of seventeen months, viz. :—

Balance sheet made up to 31st December, 1899.

Profit and loss account for seventeen months ended 31st December, 1899.

The receipts from the sale of produce were as under :—

	lb.	£	s.	d.
Tea from the Company's own Estates ..	953,150			
Tea made from bought leaf	136,341			
Total ...	1,089,491	34,330	1	6
Coffee 841 cwt. 1 qr. 19 lb. ..		3,178	3	7
Cocoa 77 cwt. 2 qr. 2 lb. ..		213	9	0
Cinchona 41,878 lb. ..		814	10	5
Plumbago 643 cwt. 3 qr. 7 lb. ..		1,157	2	9
Sundry sales in Ceylon ...		61	9	8
Total receipts ..		£39,754	16	11

The total expenditure in Ceylon and London amounted to £32,031 15s 5d, and deducting this from the value of the produce, a profit is shewn of £7,723 1s 6d. to which has to be added the balance of £409 4s 9d, brought forward from the previous year, making a total of £8,132 6s 3d.

From the above profit the Directors have transferred to the credit of Baduila Factory Account £1,030 6s 6d and to the credit of Plumbago Mining Account £700 0s 0d. The interim dividend of 2½ per cent paid on 23rd November, 1899 absorbed £2,500 and Income Tax £177 8s 0d, leaving a balance of £3,724 11s 9d, out of which it is proposed to pay a further dividend of 3½ per cent, making six per cent in all, and to carry forward to next account the sum of £224 11s 9d.

Drought and unfavourable weather continued to adversely affect the yield of tea. The seventeen months' crop, estimated at 1,025,188 lb., only realised 953,150 lb. of made tea; the yield per acre for the twelve months ended 31st July 1899, being 404 lb. against 438 lb. and 475 lb. respectively for the two preceding years.

The better prices secured during the early part of 1899 were not maintained, and our selling prices over the seventeen months averaged 7.56d per lb. as against 7·78d for the previous year.

The cost of planting an additional 18 acres of tea and the up-keep of 463 acres of young tea not in bearing are included in the ordinary expenditure.

In the month of June 1899, an outcrop of workable plumbago was discovered on the Company's land, and plumbago to the extent of 643 cwt.

3 qrs. 7 lb. has been mined and sold for £1,157 2s 9d at a cost of £473 19s 5d.

We are advised that the veins now being worked are only off-shoots, and it is expected that a larger and more valuable body of mineral will be reached.

The plumbago already secured has been cheaply obtained as our tunnels are only as yet driven some 150 feet into the face of the hill. The working as it becomes deeper will be more expensive, and it is possible that pumping plant may be required later on.

The Directors have therefore determined to reserve the profit made on the plumbago already mined, to enable the Company to thoroughly prospect what may become a valuable source of revenue,

The tea crop for 1900 is estimated at 812,100 lb. Favourable weather has so far been experienced, the crop secured to the 7th April being 301,950 lb. or 123,560 lb. in excess of the crop secured during the same period last year.

The acreage of the Company's property is now as follows :—

			Acres.
Tea, over 5 years old		..	1,740
Do planted Nov.—Dec.		.. 1895	117
Do	do	.. 1896	151
Do	do	.. 1897	133
Do	do	... 1898	23
Do	do	.. 1899	18
Area under Tea		..	2,182
Area under Coffee and Cocoa			424
Area under Fuel		..	367
Forest Patna and Waste		..	515
Total Area		..	3,488 acres

Mr. P C Oswald, a member of the Board, retires on this occasion, and being eligible, offers himself for re-election.

Messrs. Deloitte, Dever, Griffiths & Co., the Auditors, also offer themselves for re-election.—By order, J. ALEC ROBERTS, Secretary.

SPRING VALLEY COFFEE CO., LD.

ANNUAL REPORT

Presented to the Thirty-sixth Ordinary General Meeting of the Company to be held at No. 5, Dowgate Hill, London, on Thursday, 17th May, at 12-30 p.m.

In accordance with the announcement contained in the last Annual Report, the Company's financial year will, for the future, terminate on the 31st December of each year in place of on the 31st July, and in order to bring this into effect and to comply with the provisions of the Companies' Acts, Accounts are now presented to Shareholders, viz. : Balance Sheet made up to 31st December, 1899 ; Profit and Loss Account for the five months ended 31st December, 1899.

The result for this incomplete period is a loss of £131 16s 3d, which falls to be deducted from the sum of £372 6s 7d brought forward from the previous year leaving £240 10s 4d to be carried forward to the current year.

Expenditure during the latter months of the year is always heavy in proportion to the crop secured, and this result must not therefore be accepted as a true index of the working of the property.

The unfavourable climatic conditions referred to in the two preceding Annual Reports continued without improvement to the end of the year, but the Directors are glad to be able to report that since then much better pluckings have been secured. Our Manager, writing on 9th April, states that fine showers had fallen, and that flushing will be heavy for some time. Crop secured to the 7th April shewed an increase of 42,540 lb. over that secured at the same date last year.

Mr. Leon Famin, a member of the Board, retires on this occasion, and, being eligible, offers himself for re-election. Messrs. Deloitte, Dever, Griffiths & Co., the Auditors, also offer themselves for re-election. By order,

J. ALEC ROBERTS, Secretary.

THE MIDLAND (CEYLON) TEA PLANTATIONS CO., LTD.

ANNUAL REPORT.

Report of the Directors, to be submitted to the Shareholders at the Ordinary General Meeting, to be held at 30, Mincing Lane, E.C., on Friday, 25th May, 1900, at 12 o'clock noon.

The Directors beg to submit the accounts, duly audited, for the year ending 31st December, 1899.

		£ s d
The Receipts for the Season are ..		£9,670 16 11
Less Working Expenses in Ceylon..		7,011 8 0
Leaving Gross Profit ..		2,659 8 11
From which has to be deducted.—		
Debenture Interest—6 per cent. per annum on £15,000 ..	£900 0 0	
Interest on Loans ..	172 7 11	
Fees to Trustees and Auditors, Office Expenses in London, &c.	97 0 7	
Preliminary Expenses, Balance written off ..	133 5 6	
Depreciation on Machinery, &c. ..	400 0 0	
		1,702 14 0
		956 14 11
And the Balance of Loss at 31st December, 1898, being also chargeable ..		497 10 3
There remains a sum of		459 4 8
From which the Directors recommend a Dividend of 6 per cent. per annum on the Preference Shares, £2,000, amounting to ...		158 18 0
And propose carrying to the next Account the Balance of		£300 6 8

The results of the year's trading enable the Directors to write off all arrears, both for Preliminary Expenses and the balance at debit of Profit and Loss at 31st December, 1898 amounting together to £630 and also to recommend a dividend on £2,000 Cumulative Preference Shares from the dates of allotment. The London Agents have charged only a nominal sum for office rent and secretarial work, and the Directors, who have again waived their fees are glad to be able to place a sum of £400 to the credit of a Depreciation Fund.

The Tea sales for the year amounted to 386,313 lb., being an excess of 6,313 lb. over the estimate, and the net average price was 5·91d. per lb., or nearly ½d. per lb. higher than that for the previous year. The Rupee exchange showed a slight advance, the average rate being 1s 4·31d per Rupee.

The acreages under cultivation are—

Over four years old.	Under two years old.	Total.
938	80	1,018 acres,

and the crop for the current season is estimated at 385,000 lb. Under the advice of Mr. Tatham, the Visiting Agent, the Directors have sanctioned the application of manure to a further 147 acres, the

ontlay under this heading during last year having been well repaid by the vigorous growth of the Tea.

The Directors have authorised the opening into Tea of a further 30 acres of jungle, and the work was begun at the end of January. The new clearing opened last year is doing well and is in good order. A small field of about 30 acres will be partly abandoned, as the returns are not sufficient to warrant its being permanently retained in cultivation; but for a few years it will still yield a certain amount of crop, and eventually will be more than replaced by the 30-acre clearing of last year.

In his last Report the Visiting Agent writes that the group of Estates has improved during the year, and he looks for larger crops in the future, care and attention having been bestowed on the property by the Superintendent.

Under the Articles of Association, Mr. R. C. Aitken retires from the Board, and, being eligible, offers himself for re-election.

The Auditors, Messrs. Brown, Fleming and Murray, also retire, and their re-appointment remains with the Shareholders.

GREAT WESTERN TEA CO. OF CEYLON, LD.

THE REPORT

of the directors for the past year was submitted Report as follows:—

The Directors submit their annual report and accounts for the season ending 31st March, 1900.

The yield of tea has been 415,975 lb. being an increase of 102,550 lb. on last season's crop; the price realized on 330,175 lb. for which account sales have been received is 48·96 cents per lb. against 48·74 cents last season and 40·47 cents in 1897-98.

The cost F. O. B. Colombo is 31·27 cents per lb. (including 4·23 cents for manuring) against 35·98 cents (including 3·56 cents for manuring) last season.

Estimating the unsold portion of the crop at a safe figure, the amount available for distribution, after setting aside R5,291·65 for depreciation, is R70,176·10, out of which the Directors recommend the payment of a dividend of 10 per cent absorbing R58,400 00

To place to Reserve Account a sum of	10,000 00
and to carry forward the balance of	1,776 10
Total ...	R70,176 10

The estimated crop for the current season is 440,000 lb. to cost R134,872·39 being at the rate of 30·65 cents per lb. tea inclusive of 4·06 cents for manuring.

In terms of the articles of Association Mr. A Cantlay retires by rotation and being eligible offers himself for re-election.

It will be necessary to appoint an Auditor for season 1900-1901.—By order of the Directors,

(Signed) J. M. ROBERTSON & Co.,
Agents and Secretaries.

Colombo, May 28th.

FORMOSAN CAMPHOR-MONOPOLY.

The interest of the drug-trade this week has been centred in camphor, news having come to hand that the Japanese Government have at last accomplished something definite with regard to the Formosan output. It was in June last that the Government definitely assumed control of the industry, and in August they framed regulations with regard to its working. Since then nothing but vague rumours have transpired as to what they were doing, it no doubt being a fact that they found the whole situation bristling with difficulties. Now, however, they appear to have awakened from their apparent lethargy, as it was announced on Monday that the monopoly had been put in the hands of one firm only—viz., Messrs. M. Samuel & Co., the well-known merchants of London and Japan, who have paid £250,000 for the concession. It appears that they were about twenty foreign firms competing for the monopoly from the Formosan Administration Office, including Jardine, Matheson & Co. The firm in question are in close touch with the Japanese Government, and have had many business transactions with them, the recent Japanese loan being placed in their hands. It appears also that the monopoly to sell the crude product has been granted for a term of five years, and that the price has already been fixed at about 180s. per cwt., c.i.f., at which figure forward contracts will be made.

We are informed that the Japanese Government have for the past six months been quietly buying all they could, and that they have now secured 12,000 piculs, leaving, it is said, 900 piculs not under their control.

It is said to be their intention to deal with consumers in the fairest possible manner, and to that end they guarantee that the quotation will not be reduced below the minimum of 180s.—in fact, it is likely to go higher, as they intend to limit the output by two-thirds, and the effect of this will be felt when once they have got the grip of the market. Of course they are anxious to avoid speculation, and they will endeavour by all possible means to prevent it by having as few fluctuations as possible consistent with the laws of supply and demand. They will also endeavour to control the shipments, so that no country—say, for instance, the United States—will be able to accumulate large stocks. One London firm is already reported to have approached the controllers with the idea of taking over the whole output, but the offer has not been entertained. The Government have also decided that no camphor manufactred in Japan will be allowed to be exported, as it will be required for theif own consumption, so that henceforth all crude camphor will be known as Formosan.

Meanwhile importers and brokers are in a dilemma as to where they come in, for, as the matter now stands,

THE CRUDE-CAMPHOR BUSINESS

has been taken out of their hands. At the present time there is no business to be done except as regards spot stock, of which there is a fair quantity here, especially in second hands. It is estimated that the supply is sufficient to keep the whole consuming trade going for about six months, as there is a stock of 2,000 piculs on offer in the hands of London brokers. As it is, dealers here have already advanced their price to 185s., or 5s. over the Government price. Importers are naturally sceptical as to the working of the monopoly, and do not believe that it will put an end to speculation. They also contend that junkloads of crude camphor have been smuggled out of the island and conveyed to Hong Kong, but stringent measures have now been taken by the Government to put a stop to such actions. Refiners do not seem so awkwardly placed, as, once they have a fixed price for the crude, they will be able to regulate the refined accordingly. However, they may have the Japanese Government as a competitor, as it is their intention to refine a certain amount for their own consumption. Indeed, a parcel of refined from Formosa was offered at the drug-auctions in February, and sold at 1s. 10d. per lb. The establishment of this monopoly can have but one effect on the price of camphor, and that will be to place it at a higher figure. Were camphor simply used *per se* for domestic purposes, no advance would probably occur; but it now enters largely into the composition of celluloid and this will affect many things.

Reports which have been received from Formosa state that the island is now settling down to sound industrial development. The whole administration is being handled by experienced Japanese officials, and public works of various kinds are being undertaken. There is also a steady flow of American capital into the island.—*Chemist and Druggist*, March 31.

PLANTING NOTES.

NEW AREAS OF CULTIVATION.—913 acres were opened in tea, 49 in cacao, 358 in plantains, 92 in rubber, and 116 in cardamoms in the course of the year. The total acreage planted was 2,433. A much larger extent of land was sold in 1899 than in the previous year, when 328 acres only found purchasers.—*Mr. Hill.*

RUBBER.—The United States Government hoped to save some £6,000,000 worth of imported rubber annually by starting a new source of supply in their recently acquired Hawaii. It is said that the agents of the Agricultural Department will collect some 100,000 rubber-trees from Brazil, Mexico, and Central America, and begin planting in the island —*The Planter*, June 2.

CAMPHOR-TREES IN CEYLON.—Mr. Owen, of Lindula, has been making another experiment with camphor-tree prunings and has got about one per cent. camphor,—that is 7-lb. prunings from a 5-year old tree (from Hakgala) yielded about one ounce of solid camphor, besides oil. This indicates a paying industry, if an appreciable clearing and supply of prunings could be assured. Crude camphor realizes up to 200s per cwt.

EFFECTS OF SALT WATER ON THE SOIL.—A recent paper read before an English society deals with the chemical effect of a high tide on 30,000 acres of Essex soil. The last water injury lasts, according to various authorities, from five to twenty years. After the water had run off it was found that there was 2 per cent of the salt in the soil twenty times the normal amount, but not directly injurious. The damage seems to be chiefly due (says "Engineering") to the entire destruction of the earth-worms. The 1898 crop was very poor, and the following spring the state of the soil was also very unsatisfactory; still earth-worms began to appear, and nine-tenths of the salt has been washed out by rain. Apparently the soil has become gelatinous, owing to the action of the chloride on the silicates, the silicate of alumina remaining behind, while the other silicates are greatly reduced in percentage. The proper treatment seems to be to plough in green crops, dressing with lime and potash, and manuring.—*Exchange.*

PYTHON-BREEDING AT THE CALCUTTA ZOO.—It is not often that one has the opportunity of seeing a pythoness hatching its eggs, and those who were lucky enough to visit the Zoological Gardens last week might have witnessed the unique sight. The eggs are about twice the size of ducks' eggs, and exhibit a leathery crumpled up appearance, as if they were small bladders not properly distended with air; their colour, however, is a dirty white, and their covering might be compared to the skin of a mushroom. The pythoness which appears to be about thirteen feet in length, and whose body in its thickest part must be nearly two feet in diameter, is nursing her eggs in a curious manner. She has coiled herself up in a symmetrical heap till she resembles a basket of which the sides and the lid are her coils; and within this arrangement she has piled up the eggs, which she is so assiduously hatching. It will be interesting to see the little pythons when they make their entrance into the world, for, to judge from the size of the eggs, they should be quite six inches in length. The poor mother was so stared at by sightseers that authorities took pity upon her and covered up the glass face of the cage with a screen.—*Statesman*, May 24.

TRAVANCORE TEA.—Heavy yields are expected from various tea estates in Travancore, and in some quarters it is thought that quality as well as quantity will show improvement. We note that the North Travancore Land, Planting and Agricultural Society, Ld., has now been formally "absorbed" by the Kanan Devan Hills Produce Co., Ld. We are by no means sure that the planting industry in Travancore will gain by the steady aggrandisement of a company that has now acquired such a preponderating influence; but at least it is well that capital should be forthcoming for the development of work.—*Planting Opinion*, May 19.

REPRESENTATIVE TO PARA.—A suggestion has been made that the time has come for Malaya to send over a practical planter to Para to inquire into the condition of rubber cultivation in that country, methods of tapping in vogue, etc., and the Chairman of the United Planters' Association undertook to address a letter to the papers on the subject. This has been done and without exception the criticism evoked has been favourable, but the Committee of the Association think sufficient time has scarcely elapsed for them to give any further expression of opinion.—*Straits Times.*

A RUBBER PLANT FOR TEMPERATE CLIMES.—In a recent lecture at the Paris Académie des Sciences, says *Das Handelsmuseum*,. Messrs. I. Dybowski and G. Frou introduced a new rubber furnishing plant, a native of Northern China, which is at present cultivated with great success at the Jardin des Plantes, the Paris Horticultural Gardens. Up to the present time rubber has been extracted from trees only, and efforts have been made to acclimatise those from the Netherland East Indies in the French colonies, but, unfortunately, without any result whatever. This new plant, called *Encomia illinoides*, whose fruits, contain over twenty-seven per cent of indiarubber, has great economical advantage. It can easily be acclimatised and cultivated in countries of even a moderate climate.

THE NEW CUSTOMS ORDER IN REGARD TO TEA.—Last month there came into operation a new London Customs order introducing the weighment of tea with a half-pound weight in conformity with the agreement arrived at last year, the result of which will be a little gain to producers and buyers, we believe. On August 4th last, Messrs. Gow, Wilson & Stanton, commenting upon the agreement, said:—

The dispute concerning the overweight which growers of Indian and Ceylon Tea have formerly allowed buyers has been settled subject to the conditions being confirmed by a general meeting of importers to be held today, and the proposed method of weighing receiving the sanction of H.M. Customs. The main points of the agreement are as follows:—The 1-lb. trade draft to be allowed as heretofore. All Teas are to be weighed gross as formerly, odd ounces being disregarded and consequently given in buyers favour. The empty package is to be weighed to the ½-lb. (*a*) Should it weigh the exact even pound it is to be entered as such. (*b*) If it weighs the even ½-lb. or over it is to be entered as the next pound above. (*c*) If it weighs below the ½-lb. it is to be entered as the 1-lb. below. These regulations to come into force on the 2nd October, 1899. This agreement is generally considered, under all the circumstances, a reasonable compromise and one that growers can benefit by, if they exercise care in weighing gross and tare.

SUGAR looks strong from American news, but here people think advance gone far enough. Wheat and Corn should rise Coffee consumption is greater than supply and should rise. Iron, copper and tin are higher enough. Cotton growing crop 20 per cent. increase in acreage and fertilizers 28 per cent.—*Cor.*

MICA FROM CEYLON.—It will be a matter of interest to many that mica is becoming an article of export from this island. Small quantities are being sent now. The "City of Sparta," due here tomorrow, takes away 1 ton (23 cases) of mica. Last month 2? cases were sent. The article is sent to London. Mica is believed to exist in Ceylon extensively and should a demand for it be found, Ceylon ought to be able to supply it to any extent.—Local "Examiner."

THE ASSAM-BENGAL RAILWAY CO., are, we hear, taking the enterprising step of inducing one of the steamer companies who trade in our East Indies to provide a steamer service between Chittagong and London during the ensuing tea and jute season. It would mean 'full loads' either way, we should fancy, or at least hope so for the game to be worth the candle. Messrs. Duff Bruce & Co. are the new consulting Engineers at home to the Assam-Bengal Railway Company, in succession to Mr. William Duff Bruce.—*Indian and Eastern Engineer*, (May.)

INDIAN LABOUR APPLIED FOR FROM THE STRAITS!—We commend the following piece of Indian news to the enterprising Government that rules this land, a Government which for its size has more public works on its hands than any in the East and has as yet made no official announcement as to the steps it has taken to procure labour for those works:—

The following telegram from the Government of India was recently received by the Madras Government:—"Governor-General in Council learns that Protected States, Malay Peninsula, are anxious to recruit Indian labour this year in famine tracts Hoping to obtain better supply than in ordinary years they seek co-operation of Indian Government. Please consider whether any special facilities for obtaining labour can be given to Protected States exempted from Indian Emigration Act." In reply the Madras Government said:—"Instructions will be given to District Officers to allow the emigration agents of Straits Government to proceed with voluntary emigration without interference or obstruction."

ON THE COLLECTION OF RUBBER FROM CEARA TREES.—From the "Bulletin de l'Union Agricole Calédonienne" we translate the following:—"M. Godefroy-Lebeuf, the well-known and distinguished horticulturist, writes to us as follows: My Dear President,—I call your attention to the process for collecting ceara rubber which, Mr. Lecerf, my friend just now in Guinea, has made known to me. He soaks a sponge in lime juice or salt water, washes one side of the tree to be bled with this sponge, then makes some oblique incisions, one above the other. The milk escapes and the drops collect and form, in coagulating, a layer of rubber which is taken away the next morning. The trees used in the experiment were less than a year old Yours respectfully, Godefroy Lebœuf." Planters and others in Ceylon who freely grew the ceara tree some years ago, and then abandoned the culture as worthless, should experiment as above on some of the old trees and send us the result.

CHILLIES.—Mr. Stronach writes on another page for some practical information on the subject of cultivating chillies. Can any of our readers reply from actual and recent experience of their own?

WIPING OUT THE MOSQUITO.—Interesting experiments have been conducted in Sassari by Dr. Fermi, Dr. Lumbau, and Dr. Cossu Rocca, with the object of freeing that town from mosquitoes. The larvæ were destroyed by means of petroleum placed in the puddles and other breeding-grounds twice a month, and the mosquitoes were exterminated by means of chlorine and other destructive agents. Dr. Fermi considers it possible to free any town from mosquitoes by this method, unless its situation is exceptionally unfavourable. The expense, for a town of 50,000 people, is from £40 to £60 a year.—*Daily Mail*, May 12.

A VALUABLE TESTIMONY TO "TEA"—has just been paid by Professor Victor Horsley F.R.S., in the second "Lees and Raper Memorial Lecture" in St. James's Hall, when Mr. Augustine Birrell, Q.C., M.P., presided. The subject was "alcohol and the brain" and the reference to tea is found in the following paragraph of which "the Thirty Committee" and its agents ought to make the most:—

Now was to be considered the effect of alcohol upon voluntary movements—those performed by the central part of the great brain. It had been discovered that this part of the brain does not act uniformly and steadily, but that it gives out energy intermittently, in a tremulous way, by a rhythmic succession of impulses. Careful investigation had shown that alcohol increased this tremulousness, and also reduced the power of action. Krepelin found, in experiments with the dynamometer, that, after a small dose of alcohol, at first an additional amount of power was put out, but that it was quickly followed by a lowering effect. *He found also the interesting fact that after a dose of tea there was no lowering effect.* Further experiments had been made in which a certain amount of *thought* was combined with voluntary movements. Compositors offered themselves as subjects for this experiment, and by careful measurement it had been clearly demonstrated that small doses of alcohol had a deleterious effect. So in the case of Arctic expeditions and other undertakings experience had shown that alcohol as an article of diet should be excluded.

INDIA-RUBBER.—It is extraordinary the interest taken in this product all round the tropical world and beyond it as shown by the Indian Government deciding to open a 10,000 acres plantation on the Burma Coast. Our latest enquiry comes from Port-au-Prince, from a former Gardener at Kew, who is now engaged in Rubber Cultivation in Hayti for a large Belgian Commercial House. Besides growing Heveas, Castilloa, 'Manihot,' and 'Supinon' (*sic*) on a large scale, he intends trying a number of other rubber-yielding plants. From Paris, we have an interesting but rather puzzling letter from Mr. A. Godefroy-Lebeuf, which, written in English, we interpret in some parts as well as we can. The sample of rubber sent to us is very peculiar coarse and by no means clean—but still rubber. It can be seen at our office by anyone interested. There should be no difficulty in getting the pieces of bark for experiment, as desired by our correspondent; but he gives us no dimensions will strips an inch wide, by a foot in length, do?

TO ALL PARTS OF ASIA, AFRICA, AMERICA AND OCEANIA.

Seeds & Plants of Commercial Products.

Castilloa Elastica Cervantes.—Orders being booked for the coming crop of seeds available in June and July, selected seed from very old trees. R. N. Lyne, Esq., Director of Agriculture, Zanzibar, writes under date 24th August, 1899:—"Please send me 200 seeds of Castilloa Elastica for further trial; the seeds of Castilloa you sent me last August germinated very well." Price and particulars in our Circular No. 32; special quotations for large orders according to quantity; immediate booking necessary to avoid disappointment.

Hevea Brasiliensis (Para Rubber).—Orders being booked for the coming crop available in August and September, 1900. This is the only crop of seeds in the year. All orders should reach us before the end of July to avoid disappointment, as we have to make arrangements in time; guaranteed to arrive in good order at destination. We have already booked a large number of orders. A leading Sumatra Planter, who ordered 50,000 Hevea Brasiliensis seeds last year writes under date 27th February, 1900:—"I received your favor of the 12th instant, out of which I learn that you booked me for 100,000 Hevea Brasiliensis seeds for August and September on the same conditions as before, but at the price of—— per thousand." Plants can be forwarded all the year round in Wardian cases. Price and particulars as per our Circular No. 30. A Borneo planter writes dating, Sandakan, 17th August, 1899:—"The last lot of Para seeds turned out very well." Our shipments of Para plants last year has exceeded over 300,000 to different countries. Special terms for large orders on application.

Kickxia Africana (Lagos Rubber)—One of the staple articles of commerce in Lagos grow very vigorously, realizing over 3s. per lb. in the Liverpool market. Seeds and plants, price on application.

Hancornia Speciosa (Mangibeira Rubber).—Besides the value of rubber, it bears delicious fruits, which is a great favourite with the Brazilians, cultivated for both purposes. Seeds and plants, price on application.

Coffee Arabica Liberian Hybrid, Maragogopie Hybrid, C. Stanophylla and other varieties. Price of seeds on application.

Ficus Elastica (Assam and Java Rubber).—Seeds supplied with instructions; price according to quantity. This tree grows equally well in high and low land, in forest and grass land, its cultivation being extended largely by the Indian Government. For price of seeds with particulars as per our Circular No. 33.

Manihot Glaziovii (Ceara or Manicoba Rubber).—Fresh seeds available all the year round; price as per our Circular No. 31.

Urceola Esculenta (Burma Rubber) and **Landolphia Kirkii** (Mozambique Rubber).—Seeds and plants, both are creepers.

Cinchona Seeds.—Different varieties.

Sterculia Acuminata.—(Kolanut). Superior quality, seeds and plants; price on application, packed to stand the transit well for several months, a hardy tree, cultivation easy.

Erythrina Lithosperma.—Thornless variety, new crop of seeds ready in December, May and June. Price acccording to quantity on application.

Seeds and Plants of Cinnamon, Nutmeg, Clove, Sandlewood, Pepper, Cardamom, Vanilla. Cacao, Tea, Coca, Fibre, Medicinal and Fruit Trees, Shade and Timber Trees, Eucalyptus various varieties, also Palms, Bulbs, Orchids, &c.

Our enlarged Descriptive Price List of Tropical Seeds and Plants of Commercial Products for Foreign Countries for 1899-1900 are now being forwarded to applicants in different parts of the world. Also Descriptive Price Lists of Seeds and Plants of Fruit Trees, Bulbs, Tubers and Yams, and Orchids.

"SOUTH AFRICA."—The great authority on South African affairs of 25th March, 1899, says:—"An interesting Catalogue reaches us from the East. It is issued by William Brothers, Tropical Seed Merchants, of Henaratgoda, Ceylon, and schedules all the useful and beautiful plants which will thrive in tropical and semi-tropical regions. We fancy Messrs. Williams should do good business, for now that the great Powers have grabbed all the waste places of the earth, they must turn to and prove that they were worth the grabbling. We recommend the great Powers and Concessionaries under them to go to William Brothers."

Our new Descriptive Price Lists of Seeds of Shade Trees for Coffee, Cacao, Tea, Cardamoms, &c., Timber Trees, Trees for Avenues, Hedges, Wind and Shelter Belts, Ornamental Trees, Shrubs and Climbing Plants; and Seeds and Plants of Palms, Calamus, Pandanus, Cycads, Tree and other Ferns, Crotons and Dracinas, now being prepared and will be ready shortly.

Special Arrangements made with foreign Governments, Botanical and Agricultural Departments, Planters and others for supplying seeds and plants of Commercial Products in large quantities.

Agents in London:—MESSRS. P. W. WOOLLEY & Co., 90, Lower Thames Street.

Agent in Colombo, Ceylon:—E. B. CREASY, Esq.

Telegraphic Address:
WILLIAM, VEYANGODA, CEYLON.
Lieber's, A.1. and A.B.C. Codes used.

J. P. WILLIAM & BROTHERS,
Tropical Seed Merchants,
HENARATGODA, CEYLON.

THE ADVANTAGES OF AN AGRICULTURAL DEPARTMENT.

"Camellia," who writes some of the most interesting and sagacious letters appearing in the *Pioneer*, has a communication in a recent issue from which we extract the following, as of special interest to us in Ceylon, who already have the nucleus of our coming Agricultural Department:—At the present moment it is indisputable the three great planting industries of the country—I refer to

TEA,

coffee, and indigo—have entered on a critical period, at all events financially; and I do not think the most expert of either of the above will be found venturing on any sort of confident forecast for the future of either of the above noted industries,—certainly the great palmy days of all are past. Now it is worth while briefly considering first tea, if the splendid province of Assam is due to anybody it surely is the tea planters, and British capital in the main. Assam tea has been fairly floated now over fifty years. During that time it has paid Her Majesty's Government an enormous sum in revenue, it has been the lifeblood of many Calcutta firms, river companies, docks companies and created a large number of Government officials, and added very largely to Indian revenue in many ways, in short it has been one of the greatest factors of the century in India's prosperity and commercial enterprise. This being so I would maintain it is the duty of Government to assist it in every possible way, practically and scientifically, and when it is borne in mind what America, Canada, and all the Australian Governments are doing for their chief staples and have been doing for years past, it is nothing short of a disgrace that the tea industry in India at this time of day is without a mycologist, and only now just on the point of bringing out an agriculturist chemist 'tis true. Dr. Watt made a valuable investigation into the insect pests of tea no great time ago. Subsequently what did he say? That he knew of nothing so beset with empirical methods as tea; yet at this present moment

THE INDUSTRY IS ABSOLUTELY BEREFT

of a single Government Officer, systematically employed to investigate these empirical methods referred to by Dr. Watt. I do not think it is too much to say as our American cousins would certainly say,—"Guess we would made things hum differently." And I feel sure if Mr. Stebbing or any one else cares to make enquiry, he will find planters now-a-days in India have quite all they know what to do, to figure out accounts on the right side; and while I fancy none of them want charity a first rate case could be easily made out for a far more liberal and just treatment at the hands of Government, especially in the way of a searching enquiry into all things appertaining to tea. Here with an Agricultural Department, worked on Canadian or American lines, there would surely be a tea section in which experts would work out the problems and eliminate the empiricism from beginning to end. It is altogether too much to expect at this time of day when these industries have certainly got into troublesome times to expect private individuals or associations of individuals can do much. Time is required money is required, laboratory and instruments and above all

PERSISTENT CONTINUOUS INVESTIGATION

in all these things nigh every individual comes to grief in some one particular or another, and no sort of solid progress is made or possible.

Furthermore I apprehend it is extremely few among planters and agriculturist who are scientifically trained to carry scientific experiments and research very far. About two years ago the Madras planters thought to import the lady bird for their estates, and sent all the way to Australia. They spent, I believe, over R3,000 and arrived back with a perfectly dead cargo of lady birds. And the Himalayas, at all events, teeming with the lady bird, some fifteen months ago, I believe with the aid of a score of boys and R100. I could in one part of the Himalayas alone have collected easily ten to twenty thousand within a week. I mention this to show what strange things may be done from disjointed private efforts, and to illustrate how really urgent the

NEED IS FOR AN ALL-EMBRACING GOVERNMENT DEPARTMENT

that should be the planter's and agriculturist's true philosopher and friend in all things affecting soils, crops, insect pests, and remedies, and cultural methods, manures and values and so forth; and by creating a Department filled with men whose sole business were these matters, there would at once arise that fellow feeling that makes for wondrous kindness among men of the same calling: the planter and the agriculturist, would immediately be at home with his Government brother of similar instincts and aspirations. I will venture the opinion that no Civil Service, devoid of practical and scientific training, will ever induce this feeling. This is how it comes that in America, Australia, the West Indies, and Canada the same idea has just been ably taken up where quite a number of agricultural teachers have gone from England under the control and supervision of Dr. Morris, late Assistant Director of the Royal Gardens, Kew. You find the Departments and the practical agriculturalist bound mutually together in many ways, and in these countries it is conspicuously clear that the Governments very fully recognise that

BY THIS METHOD, YOU EXPLOIT THE LAND

and country, and increase its wealth, revenue, and stability. In South Australia our agricultural colonists are doing bravely under anything but Eldorado conditions; indeed when the many practical difficulties and extremely moderate crops are fully taken into account, it is surprising what they do under the generous help and guidance of their very helpful Agricultural Department. Let India do likewise and then agriculturally we shall begin to live. All through I have quoted America, Canada, and the Australian Colonies by way of example merely. We can have none of these places in India, and yet it is certain that in some things we could go better than any of them,—parodying a certain celebrated jingle I would say: "We've got the country, and the money, but we havn't got the men,"—that is in the Indian Agricultural Department.

NUTMEGS IN WEST AFRICA.—An attempt has lately been made to acclimatise the nutmeg tree in German West Africa, but only in the botanical gardens. We have not as yet heard the results of the experiments made.—*Indian Planters' Gazette*, June 2.

PLANTING LIFE IN FIJI.

BY AN OLD RESIDENT.

In the year 1867, on a fine and pleasant tropical eveninig, we dropped anchor in Levuka harbour, after a very enjoyable trip in the barque "City of Melbourne" from Sydney. After a short stay of two months in Levuka, we left for the interior of Viti Levu, to take up our residence and prepare a future home for our family. The first sight of our future home was anything but promising, on account of uncertainty of the feeling then existing amongst the natives, and the denseness of the timber land on which we had determined to settle. The nearest neighbour was at a distance of several miles. The natives were very treacherous and uncertain in those days, and you never knew how to take them until it was too late. I remember distinctly the first time we had to fire on them, when they started to destroy the cattle fences; fortunately none were ever hurt, and I have ascertained since that the shots were fired simply to frighten them, and had very little effect.

We secured the estate known in those days as Nai Vuka, the bundaries of which were two creeks running into the main river. Since then it has gradually become an Indian settlement called Illahabad. We cleared off the dense scrub and bush, and had all the land ploughed up and planted with cotton, which certainly flourished in those days, and fortune smiled on us for a very short period, until we witnessed our first hurricane. It started blowing a fresh breeze about three o'clock in the afternoon, and gradually increased in violence as the darkness came. We sat around the dining-table watching the barometor very closely and anxiously till about two in tho morning. The glass showed 27·29, and we thought it advisable to take to the hills, as the river was rising so rapidly and the house collapsing on all sides. About half an hour after leaving the dwelling, the whole building fell in, carrying destruction everywhere. When the wind subsided, we left the hills to view the damage; we had to man the whaleboat and row over the estate as far as our former habitation, which then had about five feet of water inside the remains. Out of about ten buildings not one remained standing; we took refuge under the lee of a blown-down bungalow, and prepared a meal, the first for twenty-four hours; and by night on the third day we had a temporary residence erected. The main portion of the estate was under water for about six days, the men in the meantime, some eighty of them, existing by driving for food on the plantation. It was a heartrendingsight to witness the complete destruction everywhere the eye could see. Everything looked so well and promising for a big crop, and in forty-eight hours we were, comparatively speaking, ruined,

I have witnessed some fourteen hurricanes since, but none to compare with my first hurricane. Every planter on the Riva river suffered very severely, and it took them years of hard work and economy to get their heads above water and make another start. Our first shipment of cotton, some sixty odd bales, brought us only a poor return, and barely paid the expenses of ginning, labour and freight, and left us such a small margin for profit that planters gave up cotton planting. They then went in for sugar-growing, which also proved such ruination that many growers were hopelessly in debt, and they were unable to recover themselves, mainly because the first sugar-mill ordered did not come to hand, and the crops were allowed to rot where they were grown; and then hurricane No. 2 did the rest,—it was indeed a case of the last straw that broke the camel's back.

The average cotton-planter expected to have his fortune made in first years at most. The truth is, that many a planter is a man of birth, education, and talents, a gentleman who would be an ornament to any society, but having the misfortune to have a limited supply of money, not enough to maintain him in the society to which he has been accustomed, he, with the pluck and enterprise of the Anglo-Saxon race, throws himself into a far country to battle with the soil, and wring a fortune from Mother Earth. Unfortunately Mother Earth is not always kind, and many of these gallant fellows are struggling on in debt and poverty, though still gentlemen, and keeping a firm face to the foe. Others are retired naval or military officers, who during the cotton excitement sold up, retired, and thought in a few short years to realise what a lifetime of professional exertion would never have done. Professional men abound; impatient of their slow toil in the colonies or the mother country, they too rushed to the land of promise, and drifted into the position of planters. But the majority of successful men are the canny Scotch agriculturists, who simply invested their little money here because the land was good. We have also the experienced, sturdy, but withal gentlemanly and well-educated Australians, who being disappointed by the depreciation of squatting property in their own colony, have come to woo succcss as squatters in a new country.

ROBERT CRAWFORD BENTLEY.

—*Caledonian Jottings.*

MALARIAL MOSQUITO.

AN EXPEDITION TO THE FEVER-STRICKEN CAMPAGNA.

A scheme, somewhat dramatic in its details, has been sanctioned, says Reuter's Agency, by the Colonial Office, to prove to the public at large that malarial fever is directly attributable to mosquito bite.

Two doctors who have never suffered from malaria have volunteered to live in a specially constructed hut in what Dr. Manson, of the Colonial Office, describes as one of the deadliest places on earth, for the whole of this summer. These gentlemen are Dr. Louis Sambon and Dr. G C Low, and both have made special studies of tropical diseases. Dr. Low, only a few days ago, made the important discovery that elephantiasis is distinctly traceable to mosquito bite and not to drinking impure water. Dr. Sambon has given some particulars of the expedition, which begins work on 1st June. It is intended to prove that malarial fever is caused by inoculation from infected mosquitos, and that a person who has never had malarial can live with safety in a malarial region provided he be not bitten by these insects. To this end Dr. Manson, Dr. Sambon, and a number of other doctors visited Italy and arranged a conference with the Italian doctors in Rome.

ONE OF THE DEADLIEST SPOTS.

"We then went out to the Roman Campagna," said Dr. Sambon, "and it was there and then decided that no better place could be found for

our experiment. No worse form of malaria is to be found anywhere than that which exists in this fever-stricken area. It is indeed one of the deadliest spots on the globe. There are, of course, places just as bad in tropical Africa, but in the Campagna, while it is possible to live under the worst imaginable conditions, one is within few yards of all the civilisation and resources of Rome, which is, I should add, itself perfectly healthy. The few people who live in the Campagna are the very lowest type of Italians. They suffer terribly from malaria and the unfortunate railway men and others who have to seek their living in this swamp have to be constantly changed. Even with these precautions the death rate is terribly high. A specially constructed mosquito-proof house has been designed in which we are to spend the summer, and a spot chosen for its erection. We have hit upon a locality on the line of railway running from Rome to Tivoli. The house will be put together at a spot about a mile from the little station of Cervellata, thirty minutes' run by rail from Rome, where a colony of Lombards are trying to reclaim that part of the Campagna.

PRECAUTIONS AGAINST BEING BITTEN.

"Acting on the theory that the disease is due solely to mosquito bite we must see in it that we are not bitten. So during every night, the chief time of attack, we shall see ourselves up in our mosquito-proof house. In the daytime we shall, of course, go out and pursue our work in the open air but the chances of being bitten by this special species of mosquito in the day time are very small. Our contract with the Colonial Office is to live here and not to get bitten. If we do not get fever it will be proof positive that our theory is correct, but if, on the other hand, we do get malaria it will not prove the contrary, but will be merely evidence that we have been bitten. The house in which we shall live is a specially constructed wooden building with double casements all carefully covered with special zinc mosquito proof netting. This material has also been placed under the eaves of the roof, and we have a special system of double doors and curtains in the entrance porch. There are, of course no chimneys. In addition to bedrooms for overselves and our servants and a diningroom there will be a specially fitted laboratory. Besides these precautions we shall also have mosquito nets round the beds.

INOCULATION EXPERIMENTS.

"Another part of our experiment will be the dispatch to London of live mosquitos, that have sucked the blood from cases of benign tertain fever (the mild form of the disease). These will be sent to the School of Tropical Medicine, and Dr. Manson's son and other doctors there will, by thrusting their bare arms into a box of these infected insects, allow themselves to be inoculated."

Dr. Patrick Manson, Medical Adviser to the Colonial Office, confirmed what Dr. Sambon had said, and added that malaria infected mosquitos which are to be sent home will be used to inoculate certain volunteers in England.—*Home paper*, May 5.

CEYLON PLANTERS IN THE WYNAAD.

The Wynaad correspondent of the *Times of Malabar* writes:—"The following ex-Ceylon planters are either residents now in Wynaad, or have acquired valuable properties in the taluk;—Messrs. Hugh Parry, E De Fonblanque, J S Nicolls, R Glennie, E H F Day, Stewart Robinson, and W Q Wright. Mr. Robinson, during a trip home last year, volunteered for the Yeomanry, and is reported to be in South Africa now, while illness recently compelled Mr. Wright to seek a change out of India, but we have hopes of welcoming these popular members of the community back later on."

TO BANISH FLIES.

Flies are a great nuisance in summer time around the house. They are a greater nuisance when the barn is filthy, or if it is too near the house. Where it is desired to get rid of flies, the following is recommended:—One part of benzoin and one of balsam tolu, five parts of charcoal, one and a-half of common insect powder, and one-half part of saltpetre; add sufficient water to knead a stiff paste. Roll into pastels and dry them. One will burn for some time in a room, and the fumes will destroy flies, mosquitoes, and vermin without injuring furniture or fine curtains.—"AUGUSTUS," in Park and Cemetery.—*Queensland Agricultural Journal*, April 1.

RUBBER: RANDOM NOTES FROM PARA.

The figures herewith indicate how important the ports of Iquitos and Manaos are becoming as points of shipment for rubber. The shipments direct from those ports have increased as follows:

Year.	Tons.	Year.	Tons.	Year.	Tons.
1880	... 373	1887	.. 1,688	1894	... 3,953
1881	.. 307	1888	... 2,141	1895	... 5,433
1882	... 430	1889	... 3,255	1896	... 6,827
1883	... 655	1890	... 3,693	1897	.. 7,523
1884	...1,013	1891	... 3,991	1898	... 7,173
1885	...1,462	1892	... 8,812	1899	... 7,853
1886	...1,574	1893	.. 3,745		

Albert Courbain, the illustrious Belgian explorer at present on the river Jurua, writes to the Belgian consul at Para: "I have acquired some knowledge of the Indian tribes between the Jarua and the Javary, of some of whom I have taken photographs. The soil is most rich in rubber and caucho. I can affirm the existence of a new tree, of whose leaves, seeds, and plants I shall send specimens to Para. It is abundant, the milk is rich, and the rubber is similar to sernamby. After smoking, it is flexible and elastic. These regions are in a great part unknown."

GRAO PARA.

Para, Brazil, March 7th, 1900.—*The India Rubber World.*

OVERHEAD NETTING FOR TOMATOES.

Referring to an extract from *Garden and Field* in our last issue on tomato growing, Mr. W Hobart, Main Range, Toowoomba, writes: I have grown tomatoes on overhead netting for years, and I find it the best of many plans I have tried. The young stalks must be properly guided and trained through the meshes and not be allowed to fall back again. When the vines are full grown, the top of the netting is a complete mass of fruit and leaves, and all the fruit is clean. I make the frame of stout hardwood pegs, 18 inches above ground. Hardwood betens are nailed on the top, and the wire stretched across it. Such a framework is easily taken to pieces and put up again where required.—*Queensland Agricultural Journal*, April 1.

THE NEW CONDITIONS OF TEA SALE.

(Draft proposals.)

1. The highest bidder to be the Purchaser, and any dispute that may arise as to bidding to be settled by the Selling Broker.

2. Brokers must declare, in writing, their Principals (to be approved by the Selling Brokers) within 24 hours after the purchase, or be held responsible; and those who may execute orders at this Sale for parties not resident in London shall produce a known Agent here, who shall undertake to complete the Contract; in failure of which the broker so buying shall be held responsible; and if any Broker shall purchase for any person or persons under age, he shall be held responsible. In the case of teas sold for cash, the Buying Broker to be held responsible.

3. Every person who shall be declared the highest bidder shall pay to the Selling Broker a deposit of £1 per chest at the time of sale, if demanded, or on the Saturday following the day of sale, or on the delivery of the Weight Notes; the remainder of the purchase-money to be paid on or before Friday,.......................... .... Interest at the rate of £5 per cent. per annum will be allowed on payment of the deposit, and on the remainder from the day of payment to the prompt day. The tea to be taken by the Buyers at the Customs landing weight, delivery in bond, with the Customs' tare. Draft as usual. The Customs' landing weight shall mean the full weight of the package as landed, and shall include the odd ounces which the package may weigh in excess of the Customs' inscribed weight. The only tea which may be taken from the packages before delivering them to the Buyers shall be that drawn for merchants' samples which samples shall not in the whole exceed two lb. in weight from each entire lot. The buyer will, however, have the option of taking up any entire lot or lots as printed by Prime Warrant, and if the buyer wishes to exercise this option he shall give notice to that effect to the Selling Broker not later than 5·30 p.m. on the day of sale, when the lot or lots notified to be taken under Prime Warrant shall be prompt on the Saturday following the day of sale, but the buyer shall be entitled to the usual five per cent. Cash Discount, calculated to the date of the three months' prompt, and, in addition, to a cash allowance equal to six weeks' rent. The seller shall pay rent on lots taken up under Prime Warrant, up to the Friday following the day of payment.

4. Before they were placed on show these teas have been bulked (in the country of production or London). They have been inspected and the packages weighed and tared, the leads, linings or lids properly fixed down, and in the case of London bulked teas they have been re-weighed and all the packages will be nailed or screwed down by the evening of the third day after the day of sale. Delivery will be given on the day after the day of sale, and, up to the delivery of the Weight Notes, on notice being given in writing the day before it is required to the selling broker and warehousekeeper. The buyer to have the option of refusing any packages as to which the above conditions have not been complied with.

5. Three clear working days are to be allowed for delivery of weight notes. The buyer to have the option of refusing to accept any lot or lots for which Weight Notes have not been delivered by the evening of the third day, by giving a written notice to that effect to the Selling Broker on the following morning, if, on application, he cannot then obtain them. Missing packages if equal to bulk, and not more than five per cent, are exempted from this condition, and are to be taken by the Buyer at the original price and prompt if tendered within fourteen working days from date of contract.

Old Clause 5.

6. No claim for difference in bulk from show or selling sample will be entertained unless notified in writing to the Selling Broker within three working days from the day of sale.

7. No allowance will be made on account of any damage, rubbish, false package, or unequal goodness, found, or alleged to be found, after the goods have been taken from the warehouses.

8. Lot money to the Selling Broker as usual.

9. All tea sold at this sale to be at the risk of the sellers until the prompt day, unless paid for previously, but only to the extent of market value. In the event of non-delivery by loss from fire, the contract for such portion to be void, and the deposit paid to be returned. Rent to commence from the prompt day.

10. Particulars as to whether Calcutta, London or Factory Bulked, whether average or separated tare and description of the kind of package shall be printed against each lot.

11. Any dispute that may arise concerning any parcel sold in this catalogue to be referred to two arbitrators (who must be members of either the Indian Tea Association, the Ceylon Association in London, the Tea Buyers' Association, or of the Tea Brokers' Association of London) to be mutually chosen, and who are to appoint an Umpire, if necessary, the loser to pay the fees (two guineas) to each arbitrator, and two guineas to the Umpire if called in; the fee to include attendance at the warehouses if necessary.

12. If any buyer shall fail to comply with the above conditions, the vendors shall be at liberty to re-sell the teas either by public or private sale, the deficiency, if any, with interests of money, from the prompt day, warehouse rent, and all other charges and damages of every kind, to be chargeable to such defaulter, and be recoverable against him at Law.

THE PLUMBAGO TRADE IN LONDON.

Plumbago is an article which passes through such narrow channels that one might work for years in the tea trade without hearing anything about it, though its headquarters are also in Mincing Lane. So many people in Ceylon now are on the look-out for this mineral, that I thought it might be of interest to your readers to have some information from one of the few who are really in the know. I accordingly obtained an introduction to Mr. Marshall, of Messrs. Marshall and French, who kindly placed the following at my disposal. My first question related to the reasons for the recent heavy fall in price. This I understood was not due to the supply exceeding the demand or to any marked increase in the exports, but rather to buyers holding off in the belief that, with so many Companies and proprietors prospecting, there was likely to be an increase sooner or later. Mr. Marshall thought, however, that with the monsoon almost due, it was quite possible that there might shortly be a recovery, as supplies generally fell off in the wet weather. The recovery, if it came, would be most marked in the fine qualities, for which even now there was a strong demand —£70 being offered for lumps, without business following. My informant was not sanguine as to the prospects for "common lead" with which the market was rather overstocked, and in this class a further fall was almost inevitable, but, as long as the demand for crucibles and for carbon for electric lighting went on, prospects for good plumbago were bright enough. It was reported in London that native exporters in Ceylon had formed a kind of ring, with the view of maintaining rates, but their efforts had been without success. As illustrating the enormous rise which took place

not long ago, Mr, Marshall told me of a native merchant, who had offered him 700 tons at £11. No bids could be obtained at this limit, and shortly after the price went right away to £40. "There was," as Mr. Marshall said, "a fortune in it."

Efforts are being made, I understand, from information received in other quarters, to form a more open market in plumbago, and it is hinted that, sending the stuff to the brokers who do the bulk of the present business, means simply getting the price which the Morgan Crucible Company care to pay. I do not know how this may be, but Mr. Marshall told me an amusing story of the result of an attempt recently made to effect a sale through a broker who got a consignment and who had to come to Mr. Marshall to get him to value it for him. A monoply does not generally conduce to good prices being paid for any article, but the recent rise goes to show that, in the case of plumbago, the Morgan Crucible Company does not always have things its own way. —London Cor. of local "Times."

ON RICE MEAL.

A SUGGESTION FOR INDIAN FAMINE RELIEF.

(By George S. Keith, M.D., Author of A Plea for a Simpler Life, Fads of an Old Physician, &c.)

I have always believed—and this is the general belief—that rice, which is the principal food of the natives in many parts of India, is mostly a pure starch, and contains very little from which to form a strong body of muscle and bone. I was undeceived as to this when on a recent voyage to Rangoon. I had asked if brown bread was to be had on board, and was told that it was not, and that there was no wheaten flour to make it from. A few days after I was surprised to see it on the table, and of excellent quality. On inquiring of the baker, a very intelligent Scot, he told me the bread was made from white flour and rice-meal, four parts of the former to one part of the latter. He had used this for more than twelve months when brown bread was asked for. This rice-meal is got in

THE PROCESS OF CLEANING RICE

in the rice-mills of India. From the rough *paddy* the husk is first rubbed off; part of it is used in the mill as fuel, and the rest is thrown into the sea. What is next removed is the rice-meal. This is sent to England, and is given to the pigs or made into oil-cake for fattening cattle. On my return voyage the vessel brought nearly one thousand tons of it in bags to Liverpool, where it is in great demand. It is not known to any of the corn-dealers in Edinburgh. Twelve months ago it was selling at about three pounds a ton; lately, owing to the high price of all feeding-stuffs, it has been quoted at from four pounds fifteen shillings to five pounds. I brought some of it home, and it makes excellent brown bread when used in the above proportions. I have also some of the partly-cleaned rice, from the further cleaning of which the rice-meal is obtained in quantity varying from 7 to 16 per cent. In a specimen of the partially-cleaned rice which I got from the largest mill in Rangoon, a considerable portion of the rice meal has evidently been lost in cleaning off the husk, as only 10 or 12 per cent. of the grain, and this the smaller size, has retained its natural red colour, which is somewhat darker than the natural grain of wheat. Hence it is probable that the rice could give even a higher proportion of meal than 16 per cent. I have got

AN ANALYSIS

made of this meal by the chemist of Messrs. Duncan & Flockhart, Edinburgh, and, although it had lost some of its flesh-and-bone-making ingredients, it was found to contain 12½ per cent. albuminoids, and 4½ per cent. phosphoric acid, which, in union with lime, as phosphate of lime, makes up the greater part of the ash, amounting to 7¾ per cent. The meal is thus very rich in albuminoids and phosphates. On the bank of the Irrawaddy I happened to see about a ton of rice which had been freed from the husk, but still retained its red colour; and I was told in Rangoon that the natives sometimes clean the rice for themselves, and use it in the form in which I saw it. I heard recently from an engineer who has for some time been in charge of railways in Assam that red rice used by the natives, who are a finer and stronger race than the Hindus. I have also been told of a family in the West of Scotland who have been in the habit of

GETTING RED RICE REGULARLY FROM CEYLON.

In this country the value of rice as a food is reduced still further by the mode of cooking. It is boiled in a large quantity of water. This takes out most of the albuminoids, and as the water is thrown away, these are lost. In India the water used is just enough to swell the rice, and everything is preserved. Parkes gives 5 per cent. as the proportion of albuminoids in white rice, and 11 per cent. in white flour. I have endeavoured to get the Government of India interested in the rice-meal question. It is a pity that the best part of the rice should be sent to this country for cattle when it is so much needed in India, especially for the young. As a matter of pure economy it is important that it be retained in the country. Two parts of our brown wheaten bread go as far as three parts of white bread, both in satisfying the appetite and in supplying the wants of the system. If the same ratio holds as to red rice and white rice, a great money-saving would be effected by substituting the former for the latter. The price of rice-meal got in cleaning white rice for this and other countries is also less than that of white rice; but this is of small importance compared with its value as a food. It makes excellent porridge. A time of famine may be the best for introducing

A CHANGE

in the habits of the people. As red rice is already used in some parts of India, its general use should not be a great difficulty. When we consider that brown bread is so little used among ourselves, though its use is increasing among the upper classes, and that as yet for the greater quantity of wheat consumed in this country goes to the pigs, we need not be surprised that in India also this thriftless system prevails, to the deterioration of many millions of people. In this country the matter is of less importance as, overfeeding being the rule, the poor white loaf may often do less harm than the richer brown one. In a poor country like India, where the people are underfed, the case is very different.—*Chambers' Journal.*

THE CEYLON PEARL FISHERIES:

SIR WILLIAM TWYNAM'S REPORT—WHAT IS TO BE DONE WITH IT?

We have now concluded our perusal of Sir William Twynam's elaborate and historic Report, of twenty-six foolscap printed pages, on our Pearl Fisheries and made special reference to some forty pages of appendices. To one who was generally acquainted with the writings of Capt. James Steuart, Mr. Thomas, of the Madras Civil Service, Mr. Houldsworth, Capt. Donnan and others, we cannot say, there is much that is new in the bulky Sessional Paper before us. But Sir William has very fully and faithfully fulfilled the task imposed on him by the Government in May, 1899, when his advice was requested with reference to the serious disappearance of 72 millions of pearl oysters from a bank where they were so promising two years before, as reported by Capt. Donnan last year. In replying, Sir William Twynam has, as we have said, gone into the whole history of our Pearl Fisheries and referred to every available writing on the subject within his reach. No man living has had a longer experience of the Fisheries than himself, Capt. Donnan coming next; and they have both had the benefit of all that the late Capt. Steuart and Mr. Vane could tell them, besides the Reports to Sir Hercules Robinson's Government of the Naturalist, Mr. Houldsworth, and to the Madras Government of the accomplished Mr. Thomas of its service on the Tuticorin Fisheries. Now there is no reason at all why we should follow Sir William through the history of the Fisheries, or the contents of the various Reports. No more concise or practical summary of the former can be compiled than that given in our "Ceylon Handbook and Directory" where, the years of successful fisheries, and of blanks, can be seen at a glance as also the number of fishing days, the receipts, as well as expenditure, the number of oysters fished and sold for Government, and the prices obtained per thousand. Sir William Twynam writes of the Pearl Fisheries having realised from first to last one million pounds sterling to the British Government in Ceylon. In our "Handbook," we state that Capt. James Steuart made out the total net revenue from 1796 to 1837 inclusive to be £524,522; but a careful statement prepared for Sir Henry Ward by the late Mr. J L Siebel, Chief Clerk of the Colonial Secretary's Office, showed a net return of £595,051 for the same period. To this we have to add the net receipts from 1838 to 1891—the year of the last successful fishery—which will be found as follows:—

Total Receipts	£614,597
,, Expenditure... ...	126,356
	£488,241
Add above	595,051
Giving net revenue from 1796 to date as	£1,083.292

—so that Sir William is well on the safe side.

Now, this "harvest of the seas" which gave the Ceylon Government, nine years ago, as much as R963,749 of revenue during six weeks' fishing, against a total outlay of about R100,000,—surely deserves the very best attention of the Executive Council, and it was quite time such a history as that of Sir Wm. Twynam should be prepared, in order that full consideration might be given to the whole subject. If we were inclined to be critical, we might complain of the tautology and repetition in the pages before us. But the fault is one on the right side, and we look rather for the facts brought to light which justify fresh scientific investigation or reference. In the first place, we are reminded that the Naturalist, Mr. Holdsworth, got out by Sir Hercules Robinson, although out here five years (1865-1869) *never saw* a *fishery* or a bank covered with mature, or even young oysters, and therefore got a most imperfect idea of the main features of the enterprise he came to investigate. This fact, of itself, in our opinion, justifies fresh scientific investigation. Mr. Holdsworth, too, seems to have been taken up with "false spat"—not the real spat of the pearl oyster—another fact which must have vitiated much of his work. Sir Wm. Twynam does not seem to favour the further interference of science. He thinks, perhaps, that Mr. Thomas has about said the last word in that direction and that another Naturalist will not be of much more practical service than was Mr. Holdsworth. But thirty years form a long period in the history of science—even of marine Zoology—and perhaps in what has been learned of all kinds of oysters, mussels and other shell fish. Sir William quotes with approval the pithy saying of Capt. Worsley, at one time Inspector, as to the sensible policy in reference to Pearl Oysters:—"Find them; Watch them; Fish them." Very practical and important indeed. But we want to know whether something cannot be done after "finding," to *conserve* or *preserve*, as well as watch the young oysters We entirely approve Sir William's one practical suggestion about more *inspections*; in fact that there should be a system of inspection all the year round or nearly constant watching, if feasible; and we trust Government will give effect to this suggestion, and vote the needful expenditure, at any rate for two or three years, so that we may know all that can be learned from "watching." We are not entering on the large subject of "enemies" of the oysters, save to say that the system of watching established, should settle the vexed question between Sir William and Capt. Donnan, as to whether muddy floods in our North-Western rivers have, at times, been responsible for the disappearance of millions of oysters from the nearest banks. Capt. Donnan does not believe the flood water can reach the Banks: Sir William holds the opposite opinion.

Here there is one useful outcome from Sir William Twynam's Report,—that a more continuous, constant system of Inspections and Watching, as to invasions of the Banks by Flood or Muddy water, Coast Currents, enemies in Skates, &c.; and that careful observations be made and recorded. Also, perhaps that a profitable Chank Fishery may well be established south of Arripu. But

we go further than this and trust the aid of science will be invoked. In our recent Lecture before the Society of Arts, in referring to our Pearl Oyster Fisheries, we said:—

Considering all that science and practical skill have done in the breeding of the edible oyster off the British, French, and Italian coasts, and of the increased knowledge of ocean currents and marine zoology generally within the past thirty years, I think the time has come for a fresh scientific inquiry into the Pearl Oyster Fisheries of the Gulf of Mannar, by calling in the most competent naturalists and experts available. In this inquiry, the Indian might well join with the Ceylon Government, because the former owns certain banks in the proximity of Tuticorin which occasionally yield a fishery.

Now, we are not asking His Excellency Sir West Ridgeway to do anything rash. The Governor may very well at the outset confine himself to asking Mr. Chamberlain to lay copies of this Report—as well as Mr. Holdsworth's and Mr. Thomas's Reports, if procurable, (if not the extracts in appendices will do) before the leading home scientists:—the Presidents of the Royal and Zoological Societies and of the British Association for Science, in order to ask their opinion as to whether further scientific investigation and experimental work on the spot is desirable. This can do no harm. It may lead to notable results. Then copies of Sir William Twynam's Report should be sent by the Ceylon Government to the Indian Government asking that their may be referred to their best authorities for any comment. Copies should also be sent to the Queensland and West Australian Governments with a request for any information on the subject of Pearl Oyster or Shell Fisheries embodied by them in Reports or other State Papers. The United States Government should also have a copy and be asked to exchange. We saw some years ago Reports on Californian and Central American Pearl Fisheries which would certainly be useful. We fear there is no authority to tell us about the Pearl Oyster Fisheries of the Persian Gulf; but no effort should be spared at this time in bringing together all the available information, appertaining to civilized Governments and their officers on this interesting and important subject; while the experience of marine Zoological stations (at Naples and in the Isle of Man, for instance) may throw light on "spat" and other problems which puzzled Mr. Holdsworth thirty years ago, and Mr. Thomas at a later date. At any rate the highly placed scientific Presidents we have mentioned, will be sure, if the matter is referred to them to give a conscentious opinion to Mr. Chamberlain for the guidance of Governor Sir West Ridgeway and his Executive Council. Meantime, Sir Wm. Twynam deserves special thanks for the important service he has added to the long list appertaining to his very meritorious career as a Public Servant in Ceylon.

NEW COMPANY.

Ramie Fibre Spinning Syndicate, Limited, (65,443).—Registered March 23rd, with capital £15,000 in £1 shares, to adopt an agreement with J. F. Woods, and to grow, cultivate, manufacture and deal in rhea and other fibre. The subscribers are:—

	Shares.
E A Fenwick, 42, Redcliffe Sq., S.W., solicitor	1
G T Simpson, 39, Oakley Sq., N W., gentleman	1
A C Carpenter, 23, Lynmouth Road, N., clerk	1
W Morgan, 56, Battledean Road, N., clerk ..	1
S M Johnson, 49, Rotherwood Road, Putney, book-keeper	1
A C Frisbee, 19, Spencer Road, Putney, reporter	1
G C Train, 41, Franche Court Road, S.W., clerk	1

The number of directors is not to be less than two nor more than seven; the subscribers are to appoint the first; qualification £100; remuneration one guinea each per board meeting attended. Registered Office. 71-2, King William Street, E. C.—*Investors' Guardian*, April 7.

JAVA GOVERNMENT CINCHONA PLANTATIONS.

The official report on the Government cinchona-plantations in Java for the quarter ending December, 1899, states that owing to the late monsoon the rainfall has been abnormally low. The drought caused much delay in the operations, which, this season, consisted principally of the planting out of the young plants reared in the nurseries. In other respects, however (such as damage caused by insect-pests, &c.), the conditions were favourable. An interesting part of the report is that dealing with the experiments made with different manures in order to ascertain their action on the content of alkaloid in the bark. It was found that the application of artifical manures, after twelve months' trial, led to no increase in the alkaloid-content, but that, on the other hand, the content had increased where stab e manure had been used. Possibly a longer trial may produce better results from the application of artificial manures; if so, it would prove a great boon for plantations situated at a high elevation and at a considerable distance from human habitations, as stable-manure is there very scarce, and an efficient and inexpensive artificial manure would be invaluable. A very useful substance appears to have been found in the residue from the castor-oil presses—*i. e.*, that derived from the *Ricinus spectabilis*, which is already known in the cultivation of sugar-cane, where it gives excellent results. This residue contains 6·7 per cent. of nitrogen (other samples obtained elsewhere contained only 5·46 per cent.) Sundry trials, in which about 5½lb. of this residue had been used per "boom," showed an increase in the quinine-content of the bark, varying from 0·82 to 0·96 per cent., but until the experiments are completed the results cannot be accepted as definite. Should they prove reliable, the cultivation of *Ricinus spectabilis* will no doubt be taken up on a large scale near cinchona-plantations.

In November an auction was held at Bandong of cinchona-seeds from the Government plantations, producing a total of about 760*l.* Twenty packets of Ledgeriana seed, containing 25 grammes (less than 1 oz.) each, were sold in the aggregate for 7,455fl (more than 620*l.*), while 60 packets of 50 grammes each Succirubra seed were sold for about 34*l.*

The number of cinchona-plants in the nurseries was 1,415,000 Ledgeriana, 267,000 Succirubra, and 25,000 hybrids, or 1,707.000 in all, and in the open ground 1,561,000 Ledgeriana, 490,000 hybrids 468,000 Succirubra, and 48,000 officinalis, a total of 2,567,000 plants.—*Planting Opinion*, May 26.

"COW TAIL HAIR."—Mr. Hamel Smith, of Fenchurch Street, London, reports on 12th April:—"The demand for Cow Tail Hair, if of good length, well-washed, and free of skin and bone, is still very good. Such hair is now selling readily at 11d per lb., against 6d or 7d a year or so ago. The hair is sent over from India, press packed in bales of 300 to 400 lb. each."

TEA CLEARING HOUSE.

CHARGES ON TEA.

To apply to all parcels by Ships reporting on and after 1st July, 1900, and to New Season's China Tea arriving prior to that date.

PER PACKAGE WEIGHING GROSS.

	lb. o 250 lb.	160 lb. to 199 lb.	130 lb. to 159 lb.	90 lb. to 129 lb.	80 lb. to 89 lb.	60 lb. to 79 lb.	45 lb. to 59 lb.	35 lb. to 44 lb.	17 lb. to 34 lb.	Not exceeding 16 lb.
	s d	s d	s d	s d	s d	s d	s d	s d	s d	s d
Landing and Housing Rate	2 3	1 11	1 7	1 3	1 2	1 1	0 10	0 8½	0 5	0 3
Management Rate ...	2 9	2 4	1 11	1 7*	1 5	1 2½	1 0	0 10	0 6	0 3½
Bulking and Taring (as one operation) ...	1 9	1 6	1 3	1 1	0 11	0 10	0 8	0 6	0 5	0 3
Bulking, Taring, or Weighing net separately ..	1 6	1 3	1 1	0 10	0 9	0 8½	0 7	0 5	0 4	0 3
Rent ...	01	0 1	0 0¾	0 0½	0 0½	0 0½	0 0½	0 0¼	0 0¼	0 0¼

* Old rate less 15 % 1s. 6¾d.

N.B.—The whole of above charges are Net, with the exception of Rent, which is subject to 15 per cent Discount.

The rates are chargeable on the average gross weight of each break. When the fraction of the average weight is half-a-pound or more, the higher rate will apply.

Thus :—The average of a break being 79½ lb. gross, the whole break will be rated at 80/89 lb., but the average being less than 79½ lb. the whole break will be rated at 60/79 lb.

Tea Clearing House,
21, Mincing Lane, E.C.,
30th April, 1900.

By order.
GEO. T. POCOCK,
Secretary.

HUNASGERIA TEA CO., LTD.

The following is the report of the Directors presented at the fifteenth ordinary general meeting of the Company on Thursday, May 17.

The following accounts are now presented to shareholders, viz. :—Balance sheet made up to 31st December, 1899 and profit and loss account for year ended 31st December, 1899. The tea crop amounted to 462,555 lb., of which 374,415 lb. were sold in London, at an average selling price of 6·67d. per lb. The balance of the crop, 88,140 lb., was sold in Colombo, and realised 4·91d. per lb. net. The total receipts from sales of tea amounted to £12,216 11s. 10d. The ordinary expenditure in Ceylon and London amounted to £9,769 1s. 8d., shewing a profit of £2,447 10s. 2d. on the year's working. A debit balance of £1,609 16s. 9d. was brought forward from last year, and after deducting this, there remains a sum of £837 13s. 5d. at the credit of profit and loss account. The Directors recommend the payment of the dividends due on the preference share capital for the two years ended 31st December last, which will absorb £684 17s. 5d., and that the balance of £152 16s. 0d. be carried forward to next year. On capial- account there has been expended during the past year a sum of £115 15s. 4d. This money has been spent on the completion of the lower division factory and its equipment. During the past year the tea area has been surveyed, and it is found that we possess 763 acres as against an estimated area of 789 acres; of this 732 acres are matured tea, and plucking over the remaining 31 acres will commence next year. The yield for 1899 amounted to 613 lb. of made tea per acre, comparing with 414 lb. secured during the previous year. The more favourable results are due to the higher cultivation now in force, to seasonable weather, and to the better prices realised. A system of manuring has now been established over the whole bearing area, which it is expected, will, in the course of a few years, materially increase both the quantity and quality of our crop. The estimated crop for 1900 is 460,000 lb. of made tea; and if given favourable weather it is expected that this will be secured. Mr. J G Wardrop, a member of the Board, retires from office on this occasion, and, being eligible, offers himself for re-election.

THE CULTIVATION OF YAMS.

A letter was received by the Department of Agriculture from Mr. G. Heinzman, of Albany, asking whether the department could recommend for cultivation the common yam. Mr. Cooper, the chief clerk, replied to the effect that the matter had been referred to Dr. Morrison, the botanist of the department, who stated that the yam in question was cultivated in tropical countries, and could not be expected to grow at Albany, but it might succeed in the southern districts of the colony. He recommended the cultivation of the Croscorea hastifolia, which is found growing wild from Pinjarrah to the Murchison Rivon and, according to Baron von Mueller, is the only plant on which the natives bestow any kind for

cultivation. Dry country with calcareous soil is most suitable for its growth. Dr. Morrison considers that tubers, such as the Ipomœa Batalas or Batalas edulis, which are grown with success in New Zealand and Victoria, should be cultivated in this colony. The tubers are said to be more nutritious than potatoes, and the Ipomœa Chrysorhiza, which is a native of New Zealand, has been cultivated with great success in Mildura, where tubers weighing 15lb. were produced, and an acre was found to yield 12 tons.—*Perth Morning Herald.*

THE NAHALMA TEA ESTATE CO., LTD.

REPORT OF THE DIRECTORS.

The Directors beg to submit the general balance sheet and profit and loss account for the twelve months ending 31st December, 1899, duly audited, which results in a profit for the year ending 31st December, 1899, after providing for general expenses, Directors' and Auditors' fees, interest on debentures, &c., of £244 1s. 10d., from which has to be deducted the debit balance brought forward from last year, viz. £143 7s 2d. And they recommend that the remaining credit balance shall be carried forward to the next season, in £100 14s 8d. The Directors beg to hand their report for 1899, which, though unfavourable, is somewhat better than had been expected after the disastrous season of 1898. The crop obtained was 202,943 lb. as against an estimate of 260,000 lb. Energetic efforts are still being made to combat the blight of helopeltis, which shews signs of abatement, but there are still signs that the pest has not yet been thoroughly eradicated; the latest advices from the estate are, however, hopeful. The Directors have decided to increase the annual expenditure upon manure during this season, and hope the result will be satisfactory. Two of the Company's debentures have been redeemed during the financial year ending 31st December, 1899, thus reducing the Company's liability upon its debenture debt to £9,000 or about £20 per cultivated acre. Mr. William Forsythe, the Director, retiring by rotation, being eligible, offers himself for re-election.

PRODUCE AND PLANTING.

A SUGGESTED SUBSTITUTE FOR COFFEE.—Coffee planters will not be pleased to learn that another addition to the many substitutes for coffee is in use. The "Bulletin" of the Algerian Government publishes particulars of this substitute for coffee, or at least an element of admixture with coffee, the consumption of which has already become extensive in Austria, Roumania, Bulgaria, and Servia. The commodity is known as the "Horbas fig." It is roasted and powdered, and in this state bears a close resemblance to ground coffee. The fig is largely grown in Algeria, and the exports thence to Austria are said to have reached last year the surprising amount of 120,000 quintals, or 11,785 tons. When roasted it is known as "feigan kaffe," and is very largely used by the Austrian lower middle class. It reduces the bitterness of the coffee with which it is mixed and gives it a slightly oily flavour.—*Home and Colonial Mail*, May 4.

THE CHINA TEA TRADE.—In commenting on the new season for China teas the *Grocer* says: "That it will be more fortunate than the last is the hope of many importers, for in 1899 English, Australian, Russian, and other buyers were all 'hit' by severe losses on too hasty purchases. The mistakes then made arose from the idea, generally entertained, that there was to be a shrinkage in the production of tea all round; but subsequent events proved the very reverse, and, instead of a palpable deficiency, there was an enormous and cumbersome excess. For instance, China produced 6,000,000 lb. more tea last year than in 1898; India in 1899 turned out 13,000,000 lb. beyond the quantity raised in the former season, and Ceylon shipped a larger quantity by 11,000,000 lb. than it did in the previous year. These increases in the separate sources of supply put together represented an aggregate surplus of about 30,000,000 lb., as the additional amount of tea grown in a single season, over and above the total crops gathered in the three countries named during 1898 99. The result, as may be imagined, was disastrous to the shippers, for China teas, if no other, which in May last were bought at Hankow on terms equivalent to 1s 6d and 1s 8d per lb., have lately been smashed out here at 6d to 7d per lb.—a good 1s per lb. being thus practically knock, off and lost from the prices originally paid by the China merchants at the opening of the season in 1899. The consequence is that China teas at about 9d per lb. and under show wonderful value for money, and it is rather surprising that the wholesale dealers do not purchase these growths, since they are immensely superior to others that hail from India and Ceylon. The reason of this seeming neglect of good useful China teas is, we think, to be traced to the uncertainty with regard to a constant and unfailing supply of these China teas through the season. If a plentiful and varied assortment of good common and fine medium qualities of China tea could be guaranteed and depended upon throughout the year, the blenders, no doubt, would readily respond to the call for their attention, and the London market for China tea would not suffer so much from fits of depression and prolonged flatness as it has done during the past six months."

HOW THE MARKET IS REGULATED.—"As things are the chief business in China teas too often consists of what is passing in the choice and fancy kinds, which are required only by a select class of consumers, who will have them almost regardless of price. In its general working and the course it pursues the market for China tea," continues the *Grocer*, "is not regulated so completely by the prices ruling as by the nature and extent of the demand and supply at certain critical periods of the season. The tea is invariably cheap when there is plenty on offer and more than is really wanted, and for the converse reason it is dear only when the quantity of certain sorts coming forward is too small to satisfy all purchasers for immediate use. Another circumstance that strongly affects the home market for tea is expansion or diminution in the inquiries from exporters, who operate here as agents for the continental markets, according as direct arrivals from China, India, and Ceylon flow into or fall off from the several ports of Eastern Europe. This they appear to do more frequently now than in former years, and, as the competition between shippers and the dealers quickens or flags, so the current prices of the day advance or decline. For the ensuing season quotations for new China teas, for the reasons already given, are expected to open rather moderately, as representative buyers from all quarters, having learned a lesson of caution, will fight shy of paying extravagant rates this time."

THE COCOA TRADE IN BRISTOL.—The Bristol Chamber of Commerce has issued a report on the cocoa trade in the city. It states that in the last two decades the cocoa crop has about doubled, and the biggest customers have been Great Britain, the United States, and Germany. Humboldt, a recognised authority, estimates the consumption of cocoa in Europe at upwards of 100,000,000 lb. as against 23,000,000 lb. per annum in the early years of the century. In Great Britain the consumption has risen from a quarter of an ounce per inhabitant in 1831 to 14 oz in 1887, since which date the figures have still further gone ahead; in fact, cocoa is largely displacing coffee as an article of diet. The past year has been one of the busiest known for a considerable time, and that is, of course, a matter of considerable interest locally, having regard to the important position held by the cocoa trade amongst Bristol industries.—*Home and Colonial Mail*, May 11.

TEA GARDENS IN THE SOUTH,

PLANTING AND PLUCKING AT PINEHURST—THE TEA SCHOOL--NEW PLANTATIONS.

The picturesque and profitable industry of tea-culture, whose successful prosecution has hitherto been confined to the Orient, seems to be gaining gronnd in this conntry. The introduction and progress of any occupation, affording healthy out-door work to men and women, and to little children under conditions not operating against their mental advancement, is well worthy to be chronicled in a religious jonrnal; and *The Christian Herald* presents with pleasure some interesting facts and pictures supplied through courtesy of Dr. Charles U. Shepard, Special Government Agent in charge of tea culture investigation. Dr. Shepard may be called the father of the industry in this country, for although the problem had been under discussion for many years and several fairly successful efforts to solve it had been made, it is to the practical and persistent demonstrations afforded in his tea-gardens at Pinehurst, Summerville, S.C., that we owe renewed governmental appropriations to the project.

The experimentation at Pinehurst began about ten years ago on a small scale, gradually enlarged as results justified, until about fifty acres are now planted in tea, which should produce about 10,000 pounds in full bearing. The problem for providing labor for picking tea leaf has been solved, so far as a steady, and skilful band of nimble-fingered children goes; but its price—extremely high as compared with the price of labor in the Orient—materially effects the question of profit in home-grown tea. It was indispensable to procure a reliable corps of pickers. To meet this condition, there was built a comfortable schoolhouse and a competent teacher engaged. The colored families of the neighbourhood were then invited to send their children to the school free of charge. They would be instructed in the ordinary branches, and also taught how to pick tea, and so earn money to buy food and clothing. The offer was accepted, and now there is a good list of pupils to draw pickers from as required; only children of suitable age and size are permitted in the gardens. The older children earn from thirty to fifty cents a day in tea picking season; younger ones in proportion. In one season, the gardens were picked twenty times, or once every ten days, and it took three days for the force of children to make the rounds. The establishment of such tea-picking schools as Pinehurst's will be a moral as well as intellectual and industrial influence favorable to inhabitants of the Black Belt.

Dr. Shephard has had no difficulty in selling all Pinehurst tea (black) at one dollar a pound, retail. He says: "Without undue endeavour I sold my crop of 1898, about three thousand pounds, as also about five hundred pounds, of the previous year., altogether about three thousand five hundred pounds, at a reasonable profit, although there is no protective duty on tea."

Dr. Shepard sensibly suggests: "There is a class of people who might profitably add the cultivation of tea to that of flowers and vegetables, filling out the corners of their gardens and home fields with tea bushes, as they do in China, or substituting useful as well as ornamental hedges of that plant for fences. As one result, families would be able to supply their own tea, fresh, pure and invigorating. As another, the multiplication of little tea-gardens would mean the establishment of tea-factories in neighbourhoods where the product would be bought and sold for commercial purposes." The industry can be undertaken, however only in sections where the temperature rarely falls below 25 degrees F., and never below zero; there must be abundant water supply.

Pinehurst has a well-equipped factory. Two of the processes of manufacturing green tea is shown on this page; the fresh leaf is roasted in an iron pot and then rolled by hand on a table; no mechanical substitute for these combined operations has been invented, and the necessity for hand labor is the factor which raises the cost of green tea. The green color of the Pinehurst brand has attracted much attention. Oriental teas, lose it, and other qualities that go with it, before reaching this country. A journey through the tea-gardens of Pinehurst, when the workers are among the velvety green bushes, and over the factory where children are bringing in trout baskets filled with the leaves, and men are busy spreading these out in the drying-room, and rolling and packing tea in other departments, is quite interesting, and to the Eastern traveler somewhat like a chapter out of the Orient.—*Christian Herald and Signs of Our Times*, May 2.

TEA IN ST. HELENA.

According to official reports, that tea will grow in St. Helena is proved by the existence of some China plants which were introduced in the time of the East India Company. The experiment was tried in 1896, a native of India who had been for nine years an overseer on a tea estate in Assam was taken out. Seed was procured and a number of plants were reared, but the Governor having to return to England and recall his tea-planter, the plants were left unprotected; on his revisiting the Island, he found that the rabbits had devoured the young tea seedlings, and so ended an experiment which cost nearly a hundred pounds.—*Planting Opinion*, April 28.

CINCHONA AND QUININE.

The Java correspondent of the *Straits Budget* reports that the cinchona planters have latterly grown weary of being fleeced by bark and quinine dealers in Europe, who had combined to secure low market rates for raw material. The planters struck the first blow at the ring by starting a factory at Bandong to manufacture quinine from the bark locally produced. The quinine was sent to Europe for sale. The ring so managed matters that the planters failed to get fairly remunerative prices for the Java-made drug. The planters upon this, decided to sell their quinine at Batavia. The first auction sale proved to be a great success, and the prices realised far exceeded the limit. The continuance of quinine auction sales at that port is now a certainty. —*Chemist and Druggist*, April 14.

DENDROBIUM FALCONERI.—A very fine specimen of this graceful and showy Dendrobium is in flower at the present time in the collection of H T Pitt, Esq., Rosslyn, Stamford Hill. There were at one time no fewer than 106 fully expanded blooms on the plant. D. Falconeri, which was first described by Dr. Lindley in the *Gardeners' Chronicle*, 1856, p. 692, has, since then, been imported from various districts in the highlands of Hindostan, but owing to its requirements not being generally understood by cultivators, few have succeeded in making it grow satisfactorily for any length of time. The best position for it is said to be one that is close to the glazed end of a moist intermediate-house, or in some similar position where its slender, knotted stems can be sustained in a plump condition. Light spraying daily during growing time is also recommended. The flowers on Mr. Pitt's plant are three inches across, white, tipped with amethyst-purple; the lip having a maroon-purple disc, with orange blotches on each side.—*Gardeners' Chronicle*, May 26.

PLANTING IN MEXICO:

RUBBER—COFFEE—AND CACAO.

We direct attention to another interesting letter from Mr. E. O. Darley, well-known as a Knuckles' planter in the coffee days of Ceylon, and who, after some experience of Mexico, is full of belief in its future as a planting country. On the present occasion, however, he gives us some idea of the drawbacks to pioneers in this new planting region, although he still holds to phenomenal rates of production for our old staple coffee, as well as for cacao and rubber. As regards the testimony enclosed in his letter by Mr. Darley, we can only say it carries us back to the days when cinchona was going to make the fortune of every second planter in Ceylon and when such a result could be incontestably demonstrated by "facts and figures,"——on paper. For instance, what are we to make of the following cutting from an American paper—*The Trader*—sent us by Mr. Darley?—

The following is a copy in part of a letter written by a very prominent and competent Mexican to his brother-in-law: "I advise that at once you commence planting hule, or rubber. In order that you may have an idea of the importance of the advice which I take the liberty of offering you, I refer you to a fact which has really occurred in this State (Chiapas). In an hacienda called Dona Felipa Ortiz, in the department of Pichucalco (near El Salto) there were planted four years ago some 10,000 rubber trees to serve as shade for the cacao trees, instead of raising other trees for this purpose, which would have no value except for shade. Lately a house in Tabasco offered 50 cents per tree for the privilege of extracting the milk once, and to pay $1.00 for each tree which should be dried up by bad treatment. The proprietor did not accept the offer, believing he could realize more money by taking care not to allow any more juice to be extracted each year than ought to be. He only permitted 3 lb. to be taken from each tree, which yielded $1.25 per tree net profit. The whole expense of collection did not exceed $300. A single man can cut in a day 300 cuttings of rubber tree for planting, ⅜ inch thick and one yard long. Ten men in a day will cut 3,000 cuttings, which in a month, not including Sundays, would amount to 78,000 cuttings.

If each man receives 75 cents a day, the 26 would cost	$ 195 00
two carts with two men and two pair of oxen to carry the cuttings (where required) at $10 per day, eight days ...	80 00
One man can in a day make the holes and plant 200 cuttings, so the planting will cost, a little more or less ...	300 00
Other expenses, not provided for ...	150 00
	$725 00

Simply by planting alone, the value of the property would be enhanced as soon as the cuttings take root. The cuttings will take root in four months; three years afterwards the 78,000 rubber trees will each be worth $1.00, thus increasing the value of the property by $78,000. The trees should be planted six yards apart, so that 78,000 trees would occupy 1/10 of a league about 500 acres. A league would be sufficient for about 780,000 rubber trees, etc., etc. You thus see a single league of land, will, if well planted in rubber trees, be worth in three years (without counting its value for grazing purposes, for as soon as the young-trees are well rooted the cattle may be permitted to graze on the land) $780,000 and this result can be obtained at an expense not exceeding $7,000 without counting the cost of the land. I am aware that to persons, not cognizant with the conditions existing here, the above statements will seem exaggerated. The rubber trees may be planted on the same land as cacao, the latter being put at a distance of 12 feet apart, or 300 to the acre. These trees, at four years of age, will, with proper attention, yield from four to eight pounds of cacao, worth at present in Mexico, $1·00 per lb.; so that a league of good land should after four years produce yearly in cacao 867,676 lb.: or four pounds per tree, which is a small product. As before stated, the rubber trees, which serve as shade trees for the cacao, trees, would at the same time produce their valuable milk."

It is right to mention that the above was written some time ago, so that the conditions as to prices may have changed, though we suppose, productiveness has not fallen off. All the same, it is surely time now to hear not so much of Americans rushing into Mexico, but of some of our Yankee cousins as well as of Britishers coming back with "fortunes"—as they ought to do since the "boom" has extended back at least five, if not more, years. What can be more tempting than the following programme of products and crops grown on the lands of one American Company who invite settlers and offer for sale 90,000 acres:—

PRODUCTS OF THE GRIJALVA LAND.

Corn.—Three crops per annum. Wheat.—Two crops.

Alfalfa.—Seven cuttings. Sisal Hemp.—Four cuttings.

Potatoes.—Two crops. Indigo.—Two crops.

Cotton.—Matures in three months; plant once in three years.

Sugar.—Planted once in 10 years; matures in eight months; nets $300 per acre.

Tobacco.—Matures in four months; nets $400 to $500 per acre.

Pineapples.—Bear in two years; net $200 to $250 per acre.

Vanilla.—Matures in two years; nets $200 to $300 per acre.

Coffee.—Matures in three years; nets $150 to $200 per acre.

Cacao bears in four years; nets $300 to $500 per acre.

Rubber in six years; nets $400 to $600 per acre.

Coconuts in five years; net $250 to $400 per acre.

Most of the garden products, such as Peas, Beans, Turnips, Radishes, Tomatoes Melons, Onions, can be planted each month in the year. While of fruits, you can grow Oranges, Lemons, Bananas, Granadas, Zapotes, Mangoes, Pears, Peaches, Plums, Grapes, Guavas, Dates and Figs, Walnuts, Almonds, Peanuts, Chestnuts and Pecans can also be grown.

Instead of being housed by sleet and snow during the winter season, you can serve fresh vegetables from your garden every month in the year.

There is a very great profit in raising Cattle and Hogs for market. A steer can be fattened in ninety days on one acre of land set in para grass, and mast for hogs is abundant.

Note.—The above estimates are in Mexican money.

Now, the wonder to hard-headed as well as stay-at-home Ceylon planters must be, how there can be an acre of such marvellously productive land left in the open market. Look at coffee, realizing in three years £30

(or to be quite safe in allowing for depreciation in Mexican money, let us say £15) per acre *nett*; cacao double that profit in four years; and if the planter only goes in for rubber and waits six years, a still higher income per acre is promised. Can Mr. Darley tell us if he has ever seen the coconut palms, which, in five years, bear so heavily as to net from 250 to 400 dollars per acre, that is from 3 to 5 dollars per tree? We should much like to see a photograph of such palms with their heads of nuts. Meantime, will Mr. Darley kindly keep us and our readers apprised as to results, and we should much like to know what acreage of each product he has under his own care; what number of labourers he has to aid him; their cost per month, and the amount of work done by them; and the actual crops gathered. It is quite possible that exact information on these points would draw men with some capital and experience from the East, because it is evident that competition is running too keenly out here and in India with tea.

A FARMER'S EVERY DAY LIFE.

No. VII.

(By Cosmopolite.)

FARMING

is the only business that I know of, in which a man, who gets ahead of his neighbours, may become a general benefactor. If his crop excels, the agricultural eye of the district is upon him. The sort of stock he keeps is carefully noted, and how he treats that stock is the theme of his neighbour's conversation. They watch for him to begin ploughing, sowing and harvesting, and they follow closely in his wake. When he tries to hide his light under a bushel, they lift it up and expose him to the glare of the whole world, and would fain throw a calcium upon him and play slow music, whilst they save money by following his successes. But they neither pay him nor thank him for the good his example furnishes them, and no one loses by his success. He has hobbies, no doubt, has the successful farmer, principally of an agricultural turn; and he is merciless when once he gets hold of a listener; but his name is a byword for success in the district, and he is an authority in the pages of the agricultural press. He works hard, seldom goes from home, takes few pleasures and only rejoices in the thought that

"One crowded hour of glorious life
Is worth a world without a name."

Even Sunday brings no rest to a farmer, for many works of necessity and mercy may happen on a farm, and the master's eye and hand must always be ready, if success is to be attained. Although he may go to church, wearing

THE WHITE BELL TOPPER OF A BLAMELESS LIFE,

he probably returns home, not to rest his weary limbs by idly thinking over the sermon he has just listened to, but to find some of his stock ill, and which must be doctored; the hydraulic ram may have struck work and his water supply be cut off; or a hundred different things which he, and he only, can attend to; and, be it remembered, you can never keep up with the work on a farm if you ever put off till tomorrow what can be done today. His only consolation is that he is no worse off than other people who wish to set aside the sacred day for rest, but who never get it. What rest, for instance, has the small tradesman who spends Sunday in struggling with his books, and trying to strike a balance, the labour of which is the weightiest burden of all to the white man? What rest has the owner of a bicycle, who wears out more tissue in trying to break records, on Sunday, than he does in working hard during the other six days of the week? What rest has the policeman who risks his life trying to catch scorchers,—or the parson who has to preach three sermons,—or even the common labourer who slaves away greasing his boots, oiling his hair, and dressing himself in his best clothes, in which attire he is more uncomfortable than words can express? So, after all, if the British farmer has not one day of rest in the week assured to him, he is no worse off than residents in towns, and he has one advantage over these, namely, a more healthy life. It has been said that the British farmer would live for ever, such is the healthiness of his occupation, did not a mysterious Providence impel him to establish a muck-heap opposite his back door: but to these heaps I have a very strong objection, and I have broken in all my men to hold the same extreme views on the subject, so that no such heaps exist on my farm, propagating germs, bacilli and all the other terrible things that doctors and scientists try to frighten us to death with.

There are many things in Nature that we still cannot account for, however clever we may fancy ourselves, and one of these is the coming and going of our

SUMMER BIRDS.

Take the swallow, for instance; during the past 18 years I find, by reference to my diaries, that these birds arrived 16 times on the 27th of April, once on the 28th, and this year on the 29th. They have, during these years, invariably left us on the 28th of September, with the exception of last year when, owing, no doubt, to the extraordinary warm autumn, they postponed their departure till the 2nd of October. It must be a surprise to any one, who takes thought of the matter, that they should know, to a very day, when they are due to migrate from one place to another, and one can only put it down as being one of those things that "no fellah can understand."

FARMERS AND THE WEATHER.

Sailors and others, whose business compels them to go down to the sea in ships, are supposed to be more skilful in the signs of the weather than any others; but why this is so I cannot understand, for no men are more dependent on the weather than are farmers, and yet, I am bound to confess, these are not as a class gifted with any great knowledge in this respect, nor do they seem ever to attempt to read or forecast the signs of the weather. It had been said that

the biggest fool in the village is always the weather prophet, and there may be some truth in this: for to prophesy a year in advance what the weather is to be is a bold undertaking, indeed, especially in a country like Scotland that has such a lot of climates and which all keep so close together, there being sometimes as many as five varieties in one day. There are too many orange-peels, so to speak, on the pathway to success, for one to prove a successful prophet in a country of such climatic variety. We have our Zadkiel, Raphael and Falb annually prophesying for all they are worth with regard to the weather and proving themselves false prophets all along the line, so that farmers have long since lost all confidence in them. I have always had a weakness for checking off the weather in whatever part of the world I happened to be living, and since coming here I have made a study of the deplorably erratic climate of this district. Mine, however, is not a policy of prophecy, but of average, and after having carefully noted the various changes for twelve years, I proceeded to strike an average taking into consideration the phases of the moon and other astronomical particulars; and with this data to go upon, I tried to forecast the weather of the coming year. Every year adds some more information to my stock of knowledge, and so I find that I can now hit off a wonderfully accurate forecast. Stimulated by success I once published in a local weekly, an account of the probable weather to be endured by the residents of the district in the coming year, and so remarkable were the results that I might without fear have set myself up as a prophet of the first degree. I will give two examples out of many scores, just to show my readers the superior claims of average over prophecy.

THE DISTRICT PLOUGHING MATCH

was held in one of my fields, and meeting the secretary one day, shortly before the event, I asked him why he had advertised the match for the 18th of December, when had he taken, the trouble to keep a copy of the paper in which my forecast had been published, he would have seen that the 18th of December is *always* a rainy day in Buchan. He laughed at my remark, but his mirth was changed to gloom when, although we had had lovely open weather up to the night of the 17th, the rain then began, and it poured like a S.-W. monsoon all through the 18th, after which it cleared up for another spell of fine weather. Of course, the match was a failure, only the half of those who had entered having put in an appearance. On another occasion, the steam mill had arrived—in a gale of wind—to thrash my crop, and my grieve suggested that we might put off the thrashing for a day in hopes that the wind might fall. I told him, however, that we had better not delay, because in my forecast I had it entered that there would be "heavy snow" that evening. He smiled as he pointed to the bright, cloudless sky, but went away and got the mill started to work At 5 o'clock that evening there were three inches of snow all over the country and I did not get another chance to thrash for a month and would have been badly off for straw to feed my stock, had I not insisted on thrashing when I did. Need I say that my men have the utmost belief in my forecast now, and I have been saved from a good many climatic annoyances by my own belief in it. And, let me add, I believe that anyone could make as useful a forecast for the district he lives in, if he would only take the trouble to check off the weather for a considerable number of years before striking the average.

BOUND TO THE FRONT.

The only function of importance that has occurred in our rural district since I last wrote, has been the "send off" to a member of our village rifle corps who has volunteered for the front and who was presented by his brother citizen soldiers with a pipe and some tobacco, to say nothing of a real silver match-box. A deputation from the Company went to the county town to make the purchase in preference to patronising the local tobacconist, at whose shop the choice of pipes was considered to be somewhat limited; and in presenting the testimonial, the commanding officer hoped that their gallant brother in arms would never disgrace the colours of the regiment in which he was to serve. He hoped also that their comrade, as he lay smoking his pipe behind some kopje, or spreading himself across the veldt in search of the enemy, would sometimes call to mind those he had left behind, struggling to make themselves proficient in the hands of the sergeant-instructor; and with his blessing and these few articles of considerable intrinsic value, he wished his gallant private a pleasant voyage, a glorious round of fighting and that he might come back, safe and sound, to marry the girl who had reached his heart. Tremendous applause followed and everyone began talking about Majuba Hill, Spionkop, Magersfontein and other battles which required to be explained away. In this age of presentations, if one was to limit his acquaintance to men who had not for some reason or other been presented with a Waterbury watch or a pipe and tobacco, he would have to be contented with a very small circle of friends. So common has the habit become and so monotonous the deadly uniformity of the gifts, that in our district, at least, men who wear watches or smoke pipes of their own buying are beginning to feel themselves *très distingués*.

THE ROYAL PALM.

Our illustration for which we are indebted to Mr. H F Macmillan, shows the avenue of noble Palms in the Peradeniya Botanic Garden, Ceylon, constituted by Oreodoxa regia. The magnificent gardens at Peradeniya, have been presided over by such men as Gardner, Thwaites and Trimen, all old friends of the *Gardners' Chronicle*, and of its editors, and are now under the direction of Mr. Willis, who is endeavouring with success to rival the Buitenzorg Botanical Institute under the direction of Prof. Treub. We hope shortly to publish other illustrations of this noble tropical garden.—*Gardners' Chronicle*, May 12. [The illustration is beautifully clear and distinct,—Ed. *T.A.*]

THE CACAO INDUSTRY IN TRINIDAD:

"THOUSANDS OF ACRES OF YOUNG CULTIVATION."

We gather some interesting information from the address of the Chairman at a meeting of gentlemen interested in this product, held in the Trinidad Council Chamber. We extract as follows:—

Trinidad had now from 200,000 to 225,000 acres of land in the hands of large and small proprietors. For the last ten years there has been an immense quantity of land purchased from the Government and laid out for planting cacao trees. All of that land is intended to be put in cacao cultivation and the greater portion is already covered with young cacao trees. Trinidad had shipped last year a good crop—150,000 bags; in making out his figures, he had taken an average of six bags of cocoa per 1,000 trees. It was well known that an acre contains only 250 trees; therefore it would take four acres for 1,000 trees, which would bring it to a bag and a half per acre, so that 150,000 bags [168 to 180 lb. each?—ED. *T.A.*] represent the 225,000 acres stated above. He had also prepared a return to show how the production had increased and to be able to give reliable figures he had obtained the following from the Customs officers.

In 1890 the value of cocoa exported was £531,545; in 1891 £439,786; in 1892 £648,103; in 1893 £535,055; in 1894 £509,808; in 1895 £620,634; 1896 £452,131; in 1897 £532,123; in 1898 £705,956; in 1899 £780,000.

The figures, as you will observe, show how rapidly the Cacao Industry was increasing in Trinidad, and, taking into account the thousands of acres of young cultivation, which will be increasing the return every year (he wished to mention here that a cacao estate in full bearing gives an average of 12 bags per 1,000 trees) there would be nothing astonishing in the near future—say 20 to 25 years hence—to see Trinidad export as much cocoa as any other large cocoa producing country. With the population increasing every year from the neighbouring islands, coupled with the assistance of cooly immigration, Trinidad must in the very near future export more than Guayaquil, the largest country exporting cocoa, as it must be remembered that we still have fully one-third more land in high forest, good virgin soil admirably adapted for cacao cultivation. He would be pardoned if he made a small comparison in order to show the rapid progress of the cacao industry with what was once the most important industry of the island, namely sugar. He has already told them that the value of cocoa exported last year (1899) amounted £780,000; well, from figures he had been able to obtain of sugar exported in the same year 1899 (58,000 to 60,000 tons), the value would be about £730,000 to £750,000; therefore it is seen that cocoa has topped sugar by fully £25,000 to £30,000. If these figures were wrong, he would be glad to be corrected. He only made this comparison *en passant*, simply wishing to show that the Cacao Industry had made a stride and, what was very certain that it would not remain at the present figures but would push rapidly forward.

A discussion followed which brought out some interesting facts:—

Mr. Rene de Verteuil, who followed the Chairman, said that our agricultural industries were to be gauged almost entirely by the value of the exports, because the local consumption, both of sugar and cacao was very small indeed as compared with the export, and he thought he was safe in saying that the proportion of the two staples consumed in the island was very much the same. He was inclined to think that the Cacao Industry was more important to us here in this island than the Sugar Industry. It was because the Cacao Industry here was in the hands, chiefly of the residents of the island. Such a large majority of the estates were held by residents who were descendants of the old families of the island either before or after the capitulation, that they considered it a home industry altogether, and consequently the value of the produce, such as it was whether exported or consumed locally, was really our own, that was to say, that the residents spent the value of that industry in the island, and consequently contributed to a much larger extent than, for example, sugar, on account of the indirect taxation which the people interested in, and carrying on that industry contributed towards the general revenue—because if they took, for example, say that of last year, the value of the sugar exported was some £50,000 or £60,000 below that of cocoa, they saw the only part of the money which had remained in the country was the amount which had been spent in wages and salaries, because the interest paid on the capital was chiefly to return to England—the commission also went to England, and whatever profits—and he was sorry to say they had not been great of late, but whatever profits there had been had gone to England and had been spent there, whereas nearly all the value of the cocoa they had produced and which they could not estimate exactly, had been spent in the island—even the interest on the capital which had worked those cacao estates remained in the hands of local capitalists because all the moneyed men here and those who claimed to be capitalists invested their money in the cacao properties of the island. Not only that, but, as Mr. Leotaud had remarked, the Cacao Industry was an industry that was developing very fast in the island. The whole country was being opened up and he thought he was safe in saying that four-fifths of the land now alienated was being planted in cacao, so that within a very short time the value of cacao would considerably exceed that of sugar and would probably top in importance the Sugar Industry by as much as in past days, the Sugar Industry topped the other industries of the island. It was to be borne in mind also that there were two classes of cacao proprietors—the larger and the smaller proprietors. The smaller proprietors, even more than the larger proprietors, spent the value of the cocoa they produced, in the island, and it was greatly due to those small proprietors that the trade of the island had prospered to the degree it had in past years; and he thought this was a sufficient explanation why, whilst other colonies such as Demerara, Barbados and the Leeward Islands especially, had suffered so much from the sugar crisis, Trinidad had been able to bear up with it without our revenue falling off and without, he might say, the consequences of the great depression in the Sugar Industry. That alone, he considered secured for cocoa a paramount place amongst the industries of Trinidad. Now, it might be asked whether the Cacao Industry had been favoured by the Government in the same way that the Sugar Industry had been. Evidently we could not expect that it could have been so, because sugar had been a settled industry and an important industry long before cocoa, but now that the Government was selling so fast the Crown lands of the colony, and those Crown lands were being taken up to be planted in cacao he thought they should look round, and it was their duty to communicate with the West India Committee to the fullest extent and explain to them the position in that respect—that the cacao properties were in the interior of the island, and that the interior of the island, although it had been opened up for many years, was still entirely void of proper means of communication. There were properties established for the last twenty-five or thirty years, to which there was hardly a track today, or if there was a track, it was a track over which you could only convey your produce on mule back or donkey back. Very few places in the interior were favoured with cart roads. It is true they had railways already in the country but with the exception of the Sangre Grande and expenditure was in excess of the revenue. He (Mr. de Ver Caparo) Valley railways, they were of use chiefly to the Sugar Industry. The Arima railway tapped some part of the eastern district, and so did the San Fernando railway tap part of the Montserrat, but that was nothing at all compared to the new districts to which the new lines of railway were destined. He thought they might arrive at some arrangement by which the immigration tax was to be distributed

—say two-thirds amongst the producers of sugar and the remaining one-third amongst the producers of cocoa and coconuts and that would come to a fair distribution. Some time ago when they called attention to the necessity of helping to put down

THE ADULTERATION OF COCOA,

the West India Committee in London wrote back and told them that they had better keep quiet and leave people as they were, because in England people were accustomed to drink a certain mixture which they called cocoa or chocolate and were altogether in favour of that description of beverage and consequently if they tried to force people to consume pure and unadulterated cocoa probably we would find that we would be losing our best customers. He (Mr. de Verteuil) did not know how far that was correct. He did not himself see why, if some persons preferred to take cocoa mixed with arrowroot and sugar, they should not be shown some other substance in which there was no arrowroot and sugar and in which there was simply cocoa and sugar—he did not see any harm in it, and he thought they would remember that some years ago when the beet producers brought into the English market an imitation of Demerara crystals, the West India Committee very keenly exacted that the composition called "Demerara Crystals" had no right to be so called and could not be sold as such, and he believed an action was brought in the Courts and it was held that the beet sugar so sold should be labelled as an imitation of Demerara Crystals. That was the result of a prosecution instituted, he believed by the West India Committee.

Mr. Aspinall said he thought the prosecution was due to private initiative, but he remembered the circumstance.

Mr. R. de Verteuil said that at any rate if the West India Committee took up their interest a great deal could be done. He preferred chocolate to pure cocoa, but those who had a taste for pure cocoa ought to have the pure article and not the adulterated article which was being sold in a great many instances now.

Mr. A. Warner said he had proposed to say a few words at this meeting but Mr. de Verteuil had left him little to say. He fully endorsed everything said by Mr. de Verteuil, and thought it would be a very happy thing if they could get the West India Committee to help them, especially in the question of roads and railways in developing the island. The particular point he proposed to refer to was known to all of them—that there was a penny a pound import duty levied in England, which was 14s or 15s a bag. There was also a similar tax on tea. The two taxes were, he believed, the survival of a very long time ago and had remained on because no one had had the energy to try and get rid of them, and he believed if they made representations to the West India Committee it would not be long before these taxes were removed. He had been told the removal would principally benefit the consumer, but it seemed to him that as cocoa was bought in bond into England the removal of a tax which had to be paid by the purchaser before he could get what he bought out of bond would go almost exclusively to benefit the producer, because the purchaser by bidding so much would have a margin of 15s a bag to buy on, and therefore a very large proportion of the tax would go into the planters' pockets, but even if it went into the consumers' pocket so much the better for the industry, as it would make the consumption of cocoa larger than it was, and it seemed to him that in a country like England which boasted of a free breakfast table such a tax ought not to exist. He did not believe any serious effort had been made to get rid of this tax; it had been mentioned to the West India Committee but never had been worked out or brought to the knowledge of Her Majesty's Government, and that, he thought, was one of those things in which the West Indian Committee could very well help them.

Mr. R. de Verteuil said he believed the estimated acreage in cacao cultivation last year was only 102,000.

Mr. Leotaud said he had spoken of the land held by cacao proprietors. There was 100,000 acres belonging to the sugar proprietors, but there was only 57,000 acres in sugar cultivation. His cacao cultivation at Maracas did not cover the whole area, but he was paying the tax for it.

MEXICAN COFFEE.

The *Brazilian Review* remarks:—"The *Dos Rios* Coffee planting Company of Mexico, which describes itself as the model plantation of Mexico and the largest in the world outside of Brazil (it has 2,000,000 coffee trees and $1\frac{1}{2}$ million of rubber) has issued the following prospectus on which comments seem unnecessary. How long prices are likely to remain at 13 cents, if only half what is promised can be substantiated, or why the company should be so anxious to give away such valuable properties at such a sacrifice instead of sticking to them itself, are two of the points that in our opinion seem to want explanation before rushing to invest.

"Each tract of one hundred acres, when turned over to the purchaser at the end of the fifth year, shall have forty acres improved and under cultivation, upon which there shall be 30,000 Coffee Trees five years old and 1,000 Rubber Trees 5 years old, all to be in perfect and well cared for condition. On a conservative basis the income from this property during the sixth, seventh and eight years can be estimated at $4,800·00 per annum, being the crop of 30,000 coffee-trees yielding two pounds each and worth 13 cents per pound less 5 cents for care of plantation, picking, milling, sacking, freight, insurance and brokerage, leaving a net profit of 8 cents per pound on the annual yield of 60,000 pounds. The ninth year this income will be increased $10,000 per annum by the net profit from the product of the 10,000 rubber-trees, *making a total annual net income of* $15,000·00 which can be relied upon without any fear of diminution for at least twenty-five years thereafter. This income can be still further increased by the owner diverting a portion of his profits to the planting of additional coffee and rubber in the portion of his land remaining undeveloped. At the present time the lowest cash value of such a plantation is $50,000·00 and one could readily be sold at that price, *and this we offer for a cash outlay on the part of the purchaser of only five thousand dollars extended over a period of five years.*"

EUCALYPTUS GLOBULUS IN THE OPEN.—I regret to report that trees here after attaining the height 20 feet, and in spite of the stems having been wholly protected with hay-bands, have been killed to the ground during the past winter. We have registered frosts of 25 degrees and upwards.—*A. R. Pearce Braymead Gardens. Berkshire.—Gardeners' Chronicle*, May 26.

THE BENGAL TOBACCO TRADE.—It will come as a surprise to many to know that for several years past the imports into Calcutta of tobacco grown in Bengal Proper have averaged nearly five lakhs of maunds per annum. About a lakh of maunds also arrives from Behar, while the average from Madras during the three years 1896 97, 1897-98, and 1898-99, for which statistics are now published, was under four thousand maunds per annum. Calcutta's largest customer in the matter of tobacco is Burma, which in 1898 99 took fourteen million pounds, part of which no doubt comes back in the form of Burma cheroots, Madras took 800,000 lb., the United Kingdom 22,000 lb. and France 19,000 lb. The amount exported, however, accounts for only about half the total. The other half, apparently, is consumed in Calcutta, where the hubble-bubble presumably accounts for the annual disappearance of some two lakhs of maunds.—*Friend of India*, May 24.

Correspondence.

To the Editor.

COFFEE PLANTING IN NYASSALAND

BY AN EX-CEYLON PLANTER.

Mlanji, B.C. Africa.

DEAR SIR,—Your letter of 9th February came duly to hand. I shall send specimens of our spotted bug to Mr. Green's friend in Surrey, England. From experiments carried on by myself, imprisoning our bugs in a muslin bag with newly formed berries, medium sized, and fully matured ones, I find that the bugs, puncturing the young fruit up to two months or so, damage them and by sucking the juice, producing black and empty berries after two months and up to four months; the berries when damaged by bugs are spotted black and brown, not entirely destroying the fruit. When the parchment forms after four months or so no damage appears to be done by this bug. The natural enemy of this bug is the soldier ant, identical with our Ceylon tiger. I have had a bug put beside those ants and they devoured it ravenously.

This bug is blamed in British Central Africa for causing so much unsound coffee. We are troubled with much worse enemies, however: borer and periodical droughts which do the maximum of damage to our coffee. Some old estates where no bug is to be found have 80 to 90 per cent spotted and light berry caused by those enemies. Shade mitigates those two evils, fosters the red ant and other natural enemies of our insect pests and is a cure for sunstroke and canker in our coffee fields. It will take a year or two yet to tell what the result of shade will be on coffee here. So far, however, it beats all I have ever seen anywhere. From two year old trees I picked off two leaves and enclose them for your inspection, measuring green 9 by 4 inches. I do not think Arabica coffee leaves can be found in Ceylon to beat those. This coffee, two years old or two years and eight months from seed, is being topped at 5 feet 6 inches and it has a crop just ripening on the trees of about 1 cwt. per acre. Coffee, in the open here, yields a heavy crop or two: 7 to 8 cwt per acre is common enough, and 10 cwt has been secured at three and four years old; but sooner or later it gets such a scorching that it never recovers and must be cut down or abandoned. Cutting down even does not always prove a success as the trees are often damaged right into the ground especially in very light friable soil.

I am trying to get up an acreage of tea and have now got 12 acres planted with a very good jât. I was a long time in the country before I learnt how to keep *good* health here: the secret is quinine taken whenever I feel I want it and most old residents can tell when quinine is wanted. One gets heavy and it's a trouble to go about and attend to one's work; then is the time to take freely of quinine and an opening dose or two. I often remember how true William Smith the Patriarch of Dimbula's words were, when he said to me just before leaving for Africa: "Keep your quinine bottle on your side-table or side-board and take a dose any day, the same as you would your early tea. I had to do so when living in Kurunegala and Africa must be as bad."

Whyte is now in Uganda: he kept very good health when here; Lloyd, Tunbridge, Moggridge and others, who came from Ceylon, seem to keep good health, they all know of course, how to live in the tropics. Those who have broken down in this country are mostly young men who ought never to have come here at all or those who won't learn how to live here and no experience teaches them either. I have been home once and that only for two months during my ten years in Mlanji. It was not owing to ill-health that I went home. I landed in Ceylon in 1872 and never left till I came to Africa in 1890. My S. D. days were spent in Dimbula under the late James Ryan, opening Glenomera and Stirling, and when the estates were leased to H. S. S. & Co., I went to Matale. Most of the men in Dimbula in my day, have either left or gone over to the majority; few remain who were at the ball given to Sir Wm. Gregory in Middleton Store and were photographed on the patana afterwards. I was over the Nyassaland Co. Lirchemya's Estate the other day and think it should pay its way from now and make something for the shareholders in about two years' time *if carefully managed.*

The war does not affect us yet, but it is very probable we shall be joined to South Africa with the B. S. A. Co. territory, all under one Government, and get our railway, etc., after the war is over. Salaams!—Yours sincerely,

HENRY BROWN.

A NEW (?) INSECT PEST IN CEYLON.

DEAR SIR,—I read in the *Auckland News* that importers of plants from Japan are warned against the introduction of a scale insect known as *Diaspis amygdali*, which is said to be a dangerous pest and may even outstrip the alarming San Josè scale. The insect in question first attracted attention in the United States, "where it was found to be a serious pest on the plum and the peach; also on almond trees and tea bushes, which had been imported from Japan. In the latter country, it has been found destructive to the mulberry trees. *In Ceylon* it is partial to the Pelargonium, and it feeds on many species of plants."

Seeing that the native habitat of the Pelargonium has no connection with Ceylon, the plant being only grown for ornament round upcountry bungalows, the location of the scale here is probably a mistake. Could you kindly enlighten us as to this?—Yours faithfully,

X.

[We have referred the matter to Mr. E. E. Green, the Government Entomologist, who kindly sends us the following:—"*Diaspis amygdali* is a common scale-insect in Ceylon—see 'Coccidae of Ceylon,' Part I, p. 87, Plate xxiv. It is particularly noticeable on Geranium plants grown under shelter of verandah or eaves of bungalows, where the masses of small white scales (of the male insect) appear like white mildew on the stems of the plants. It also affects many indigenous plants, *e.g.*, *Callicarpa lanata*, *Tylophora asthmatica*, etc. Curiously, although it occasionally occurs on cultivated peach trees in Ceylon—it does not seem to flourish on that plant in this country. It earned its specific name from its destruc-

tiveness to peach trees in Australia. The species is very possibly an importation in Ceylon; but its introduction must have been somewhat remote, as it has already acquired a large number of natural enemies (chiefly hymenopterous parasites) which serve to keep it in partial check."—ED. *T.A.*]

PLANTING IN MEXICO—RUBBER, COFFEE, CACAO—THE DRAWBACKS AND ADVANTAGES.

(By an ex-Ceylon Planter.)

Mexico, April 10.

DEAR SIR,—I have received your paper of 5th January, and note your remarks *re* my letter you published in it. You ask what are the drawbacks here. Much the same, I imagine, that the pioneer planter of Ceylon had to contend with 60 years ago, the principal ones being lack of roads and scarcity of labor. The Mexican peon in the tropics will not work, unless in debt and obliged to do so and then does not compare with the East Indian cooly, except for clearing new land at which work he is pretty good. Any one having sufficient capital would import Chinese coolies, which are in the end much cheaper than the native peon. Taxes are low enough. This Company owns 100,000 acres and the tax is only some $400 £40) a year. The personal tax on each man is $1·50 (one doller fifty cents) and school tax ·80c (eighty cents) per annum. Bank cheques require a stamp of 5c (five cents) each and bills of sale and receipts 10c (ten cents) per $100. New colonies of agriculturalists and new manufactures generally can get exempted from *all* taxes for ten years. There is a Federal tax on the manufacture of rum and tobacco, which is not very high, but I have not the exact figures by me.

Mexico is well policed and any plantation can have a resident policeman by applying to the Tefe Politico of his district and paying wages of same, some $20 per month. You ask why do not British and American capitalists take up land? The latter are doing so in enormous quantities every year. The whole of the Isthmus land suitable for coffee, rubber and cacao is now practically owned by Americans who are rapidly colonising to and the Vera Cruz and Alourado Rail-road; iand the Tehuantepce Rail-road has passed into the hands of Sir Weetman Pearson and he has built a new railroad from Tinle to San Juan Evangelista, and put a large fleet of new passenger steamers on the rivers connecting with his railroads,—all since your hard-healed friends from Ceylon visited Mexico,—two of whom did me the honour to visit my camp in that part of Mexico. The railroad from Cordoba to Santa Lucretia is also now being built on past my old camp Several of the American Companies have also put steamers on the rivers so that, so ar as that part of Mexico is concerned, transport facilities have been pretty well revolutionised since the aforesaid hard-hearded Ceylon planters visited there.

You doubt cacao bearing 16 cwt. per acre. or selling for 90 shillings. I do not claim that all cacao does so; but that well-cultivated cacao plantations on this rich soil in Tabasco will do so and do do so, is beyond doubt. I was asked to value the crop on 6,000 six-year old cacao trees bearing their first crop last month. I counted on many trees 135 pods and could only find a few having 53 to 55 pods, the average was over 70 pods. There were 400 trees per acre, which, at 20 pods per lb., is easily producing 12 cwt. per acre. The owner told me he estimated he spent (3c) three cents per tree per year on cutivation which consisted only in cutting down the weeds every three or four months. Cacao is quoted today in Mexico city at $1-15c per kilo as you will sec by sale list enclosed: in New York, 35c silver per lb. I have not been long enough in this country to plant and take in a crop of either rubber or cacao, but I have gathered three lbs. of coffee per tree from three-year old trees of my own planting. No one not having seen the crops produced on this fertile soil can imagine the crop coffee gives here: it is, however, of low class at this elevation. High grown Colima and Cardoba bring good prices; but the crops are smaller, ½ to 1 lb. per tree. In Mexico all crops—coffee, rubber, cacao—are estimated by the tree, not the acre: at this elevation 500 feet coffee is planted 12 ft. by 12 and covers the ground; at 3,000 feet, it is planted 5 by 5 ft.

Life on a plantation here, so far as society and comforts are concerned, does not begin to compare with Ceylon life of the 1870's—no races, no elk hunts, no gymkhanas. It is a new country and unless a man is willing to give up all that he had better not come. Anyone having a knowledge of planting and some capital, can make money here; if he has neither of these he is better away.—Yours truly, E. DARLEY.

LIGHTNING—NARROW ESCAPES FROM, IN CEYLON.—No. II.

SIR,—You ask for narrow escapes from lightning Mr. Stewart Taylor had one, two or three years ago at Passara. Lightning burnt the toe of his slippers and played havoc with the contents of his bungalow. Mr. Harvey, of Cattarem, in Dolosbage, had two very narrow escapes. There are certain parts of Ceylon that one wishes not to be in when there are thunderstorms:—El Teb or its neighbourhood in Passara, Cattarem in Dolosbage, and Mr. Duncan's bungalow site in Rangala.—Yours truly,

PLANTER.

No. III.

SIR,—The letter of "Planter" reminds me of the Cattarem Bungalow being wrecked by a flash of lightning, while the late Mr. Cottell and I were sitting at table, taking early breakfast one morning in 1864. It gave us a bit of start, for it came with a report like a cannon and sent the chimney through the roof about our lugs, smashing a large clock and pictures, etc. The whole bungalow was injured and the lightning tore a hole in the wall of one of the bedrooms, large enough for me to go through. A.

SINHALESE CATTLE IN TRINIDAD.

Government Farm Trinidad, B.W.I., 20th April, 1900.

DEAR SIR,—Will you kindly accept my annual report for the past year and also my best thanks for your notice of that of the previous year.

Enclosed are photos of crossbred cattle—Zebu and Redpoll cross: the cross has been successful, a useful animal being the result. The bull at two years weighed 900 lb. and cost some £3. He

has all the appearance of a good beet beast. The heifers are now coming into milk and their yield is from 8 to 10 quarts per day of excellent quality.

You will perhaps remember our getting some small cattle from Ceylon. We have not done so well with them as was anticipated. There has been no increase amongst them and unfortunately the bull has broken his leg. The leg has been set, but from his restlessness there are no great hopes of repair,—I am, yours truly,

C. W. MEADEN.

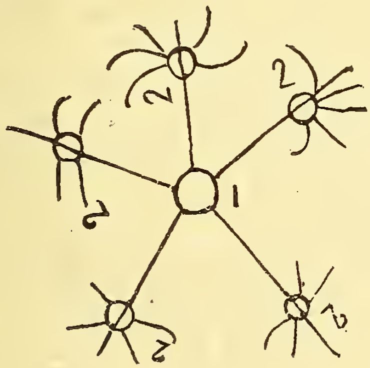
[The photographs—very fine ones—can be seen at our office. The Report will be reviewed in due course.—ED. *T.A.*]

EXPERIMENTS WITH INDIARUBBER.

Paris, 29th April.

DEAR SIR,—I should like to know if I could procure in Ceylon, dry corks or bark (écorces) of Indiarubber plants for experiments such as Alstonia, Hevea, Urceola, etc. For the species of little development, few stems will be sufficient. You know that I have attracted the attention of chemists to the possibility of extraction of rubber by dissolvents and that the results have proved that for Landolphia, etc., etc., dissolvents are not needed and extraction can be purely mechanical. I have sent twice to America for samples of leaves of Castilloa, but the experiments have been totally unsuccessful; but it is not the same with corks of Landolphia particularly if (? preserved) on the roots.

Curiously, and you will easily understand the fact of plants one year old, when I say at two months old, if they do not show nearly any rubber in the stem s, are very rich in the roots. So I beg the planters on the Colony if they have Landolphia under hand, to marsol (? sic) to layer the stems all around the mother plants and when hour of exportation come, to whig (? pull) out all the children around the mother. Do you understand what I mean ?



1 is the mother plant which must never be touched; 2 are the children layered in the soil where they have much roots. These can be digged out and all the cork (? bark) from the stems or the roots be sent to manufacture and the planter can begin again with new shoots from the mother plants. Landolphia Hendelotii gives easily 8 per cent of good rubber from the stems and ten to eleven per cent from the roots,—which you can easily see by the samples I sent to you.

You must understand the interest for me to know the value of the corks (? bark) of any rubber plant —Yours most truly,

A GODEFROY-LEBEUF,

Horticulture,

SEYCHELLES GUANO AND MR. BAMBER'S REPORT ON CEYLON TEA ESTATES.

Analytical Laboratory, 79, Mark Lane,
London, E.C., May 11.

SIR,—Just a few lines to say that I have only this week seen a copy of Mr. Bamber's report; indeed, I doubt if I should have done so, only Mr. Talbot called on Monday to consult me in reference to the use of the Seychelles Guano as a phosphatic ingredient of tea manures, and in the course of conversation asked me if I had seen his report, to which I replied that up to the present time no copy had been sent me. The publication which apparently has only been privately circulated, is very interesting, especially the portion referring to the manufacture of tea, concerning which, you will remember, I originally made some urgent recommendations, pointing out how very useful careful investigations made in the factory must prove in the future.

In reference to the system of manuring suggested by Mr. Bamber, I refrain from going into details, as I may be consulted professionally, and have already reported on some of his soil analyses.—Yours faithfully,

JOHN HUGHES.

WHO WILL TELL US MORE ABOUT "CHILLIES." ?

Aberfoyle, Rakwana, May 15.

DEAR SIR,—I shall be very much obliged if you could give me any information by post or through your Journal regarding chillies:—

1. The most suitable kind for local and home consumption.
2. Method of planting, from nursery, or sown broadcast.
3. Safe estimate of crop for one year's bearing.
4. How long each bush lasts from time of coming into bearing, and when the bush comes into bearing from time of planting or sowing.
5. What enemies to fear or pests ?

You have had some information in the *T.A.* on this subject, but not giving any of the information now asked for.—Thanking you in anticipation, I am, sir, yours faithfully, W. G. B. STRONACH.

[We shall be obliged if any cultivator who has had actual experience in raising "chillies" will send us answers to the above questions.—Meanwhile we quote the following from the *Treasury of Botany*.—ED. *T.A.*]

Capsicum annuum a native of South America, but introduced into India and elsewhere, furnishes the fruits known as Chillies; these, as well as the fruits of *C. frutescens*, and several other species or varieties, are used to form Cayenne pepper. The species of *Capsicum* are chiefly natives of the East and West Indies, China, Brazil and Egypt, where they are much esteemed for their pungent fruit and seeds, which, under the name of Cayenne Pepper, or chillies, form an indispensable condiment which Nature herself appear to have pointed out to persons resident within the tropics. According to Sir R. Schomburgk, the natives in Guiana eat the fruit of these plants in such abundance as would not be credited by a European unless he were to see it [*Jour. Hort. Soc.* ii 153). In Jamaica the species most esteemed

is the Bonnet Pepper (*C. tetragonum*), the fruits of which are very fleshy, and have a depressed form, like a Scotch bonnet. The shrubby Capsicum, or Spur Pepper, (*C. frutescens*), is a native of the East Indies, and has been in our gardens since 1656. It forms a dwarf bushy shrub, with white flowers, and bears numerous small oblong obtuse pods which are very pungent, and in their green and ripe state are used for pickling, as well as for making Chilli vinegar. This is done by merely putting a handful of pods into a bottle, and afterwards filling it with best vinegar, which in several weeks will be fit for use. But the chief purpose for which this species is cultivated is for making Cayenne pepper, which is often prepared by drying the pods on a hot plate, or in a slow oven, and then pounding them in a mortar, and passing them through a hand-mill until the whole is reduced to the finest possible state. After this has been done, the powder is to be sifted through a thin muslin sieve, and preserved in well-corked glass bottles for use. The common annual Capsicum, or Guinea Pepper (*C. annuum*), was introduced into Europe by the Spaniards. It was cultivated in England in 1548, and is sufficiently hardy to thrive in summer against a south wall in the open air, and nature its fruit. The colour, direction, and figure of the latter is very variable—some being yellow, others red, and others black. In a green state they are used for pickling, and when ripe are mixed with tomatoes, &c., to form sauces. They are also dried and ground for use like Cayenne pepper. The Berry-bearing Capsicum, or Bird Pepper (*C. baccatum*), is indigenous to both the East and West Indies, and has been grown in this country since 1731. Its pods are erect, roundish, egg-shaped, very pungent, and when ripe are dried and used for the same purposes as those of other kinds of *Capsicum*. They also form one of the chief ingredients in the preparation known in the West Indies as *man-dram*, which is usually resorted to by those affected with loss of appetite or weak digestion, and consists of cucumbers sliced very thin, shallots or onions chopped very fine, a little lime juice and Maderia wine, to which is added a handful of the pods of this pepper, and the whole are then mashed together, and mixed with as much liquid as may be thought necessary. Besides the three species noticed as being the kinds most generally cultivated, there are many other species and varieties occasionally grown for the sake of their pods, all of which yield a warm acrid oil, which acts powerfully on the stomach, and is thought to correct flatulency, and assist digestion. [W. B. B.]

THE INDIAN CURRENCY AND EXPORTING INDUSTRIES.

London, 25th May, 1900.

SIR,—Last Thursday I attended Mr. Baines's lecture on the Industries of India, and spoke in the discussion, and showed that in consequence of the currency measures, all industries must decline. In a word, I showed that the Government, by their method of giving stability to the exchange value of the rupee, had given an unstable value to property. That it had declined in value since 1893, and was liable to be again diminished in value should the needs of the Government compel it again to raise the exchange. I also showed that the withdrawal of capital was proved by diminishing wages, and diminishing means of employment. When Lord George Hamilton attempted to answer me he avoided India altogether and, as a reply to what I had pointed out as to the decrease in cooly immigration into Ceylon, merely said that the report on the island was favorable. When Mr. Rees (who is in the Council at Calcutta) attempted an answer, it was merely to say that he knew of a considerable sum that was about to be spent in planting in Travancore. But, of course, no answer was possible. Formerly we stood on an automatic currency which kept us on even terms with our silver-using rivals in other parts of the world, whereas now we are not only heavily handicapped in our competition, but may be much more so, if recurring famines cause the Government, as is very probable, to again force up the rate of exchange.—Obediently yours,

ROBERT H. ELLIOT.

P. S—You will observe remarks by Mr. Vithaldon D. Thackersey in *Weekly Times of India* for May 5th, on how the Bombay Cotton Mills have been suffering from the currency legislation, but, of course, every kind of productive enterprise must suffer. The Mysore gold mines managed by a single agency lose upwards of £31,000 a year for every penny the exchange has been forced up, and considering thatthe exchange ought now to be at 1s 1d. and that their operation have increased since the above calculation was made, the present loss is probably about £100,000 per annum, or say £90,000 if we allow £10,000 for saving on purchases from this side.—R.H.E.

A TAMIL TREATISE ON AGRICULTURE.

(*Communicated.*)

Mylapore, June 1st, 1900.

SIR,—In a separate packet I send for your kind perusal and early review my book on Agriculture in Tamil. The book contains collection of agricultural practices explaining the principle underlying them, thus solving the problems of Freegrowing, Village Sanitation, etc. Attempt was made to write it in a village Tamil, so that every Tamil-knowing individual may understand the contents of the book.

My 15 years' experience in questions connected with Agriculture warrants me to present a publication to my countrymen. The publication is no commercial concern. It is done with love—the local papers have recommended the book to the notice of the Government so that it may be popularized in villages and made a subject of study in schools.

If you think the book is deserving of the above recommendation I request you will also help me in taking it to the notice of Ceylon authorities: I shall thank you much. I require only fair play. In conclusion I request you will send me the issue containing the review for my information. An early review is solicited.—Yours faithfully,

G. RAJAGOPAL NAIDU,
Agricultural Inspector.

Mylapore: Madras.

(*Review—Communicated.*)

'VIVASAYA VILAKKAM" or "Agriculture Explained" is the title of a Tamil treatise on Improved Agriculture by Agricultural Inspector Rajagopal Naidu of Madras, late Superintendent Lashio Farm, Burma. This book bears on its title-page the appropriate motto "India's need is improved Agriculture," and is dedicated to Mr. Charles Benson, Deputy Director of Land Records and Agriculture, Madras.

The opening lines of the author's preface rendered into English would read thus:—"The necessity for the improvement of agriculture in a country like India where it forms the mainstay of the people will be evident to all. An attempt at such improvement is, however, beset with difficulties. Nevertheless I have ventured to set forth in the following pages, for the benefit of the ryots, some information which has struck me as essential to agricultural reform after fifteen years' personal observation of the agricultural customs in different countries and a study of English works on

SCIENTIFIC AGRICULTURE.

"Although this little book may not be productive of any marked benefit, I hope it will, at least, create an interest in agricultural matters in the minds of the ryots. Such an interest once engendered will ultimately lead to agricultural improvement. Ryots, who are desirous of attempting the improved methods suggested here, would do well first to try them on a small scale and, after they are satisfied that they would suit the conditions of their soil, climate, &c., carry them out extensively."

The author displays a deal of good sense and caution by giving this last piece of advice, for in a large country like India where the conditions of soil, climate, &c., differ rather widely in various parts, an experiment, on a small scale, would be very prudent, before the general introduction of a new method that has been found to succeed elsewhere, even in another part of India itself.

The first chapter is introductory and shows the dignity and importance of agriculture and the need for agricultural reform. The second is about the different kinds of soil. The third chapter treats of certain preliminary operations and auxiliaries to agriculture such as levelling, fencing, the different kinds of trees used for live fences and boundaries, irrigation and the sinking of wells. The author's remarks under the last heading show that he is free from the usual oriental superstitions which many natives of India and Ceylon, even of the educated classes, find difficult to get rid of. He says—"It is a common custom in this country to consult an astrologer in selecting a site for sinking a well. This is like the blind leading the blind. For we do not find either astrologers or Brahmins who ascertain the truth and impart it to others. Many have been ruined by trusting false astrologers who make a vain profession, merely for the sake of earning a livelihood. But Europeans use a borer, called the 'Auger,' in order to find out whether water can be obtained at a certain site or not. When this instrument is inserted in the ground and worked, so as to reach deep enough, the different strata underground can be ascertained, and we can not only find out at what depth water is obtainable, but also whether the water is fresh or brackish. When this test is made use of we can know with something like mathematical certainty, the best sites for wells and dig them without undergoing loss or disappointment." The fourth chapter which deals with

AGRICULTURAL IMPLEMENTS

compares the ordinary native plough of the ryots with the improved plough, and shows the superiority of the latter by means of facts, figures and illustrations.

In India where unlike Ceylon, dry cultivation is done on an extensive scale, there are several native implements used to economise manual labour and to expedite work in the cultivation of dry crops. The seed drill, an illustration of which appears on page 44 is one of these. This implement which can be easily drawn by a pair of ordinary country bullocks, goes on sowing three rows at a time. It is said that Sir James Caird, one of the famine commissioners appointed in 1876, was agreeably surprised at the work done by this seed-drill and remarked that it served just as well as an English seed drill which would cost from five hundred to eight hundred rupees. The other labour-saving implements treated of in this book are, a leveller and clod-crusher used after ploughing, a weeding machine that can be used between the rows till the plants are about eighteen inches high, a sickle-shaped hand-weeder, a roller which can also be used for separating the larger variety of grains, such as sorghum from the stalks, and the wheel barrow. The fifth chapter deals at length with the different sorts of

MANURES

and how they can be utilized for Indian crops and soils. The next treats of the different kinds of crops such as cereals, peas and beans, fibre plants, root and leaf crops and several other varieties including fruit trees. There is a strange botanical inaccuracy in the classification of the grape vine, for it is said that it belongs to the same family as the tobacco. In other respects the information given about that plant may be useful. The following is what is said about its culture:—"The grape-vine is a long-lived creeper and requires frequent manuring and abundant watering. It is usually grown either from layers or cuttings. In the latter case, cuttings of branches of more than a year's growth are planted in prepared soil, covered with straw. In Europe the vines are planted at a distance of ten feet apart. Fish manure is highly suited to this plant. The soil round the vines should be frequently stirred. During the first year it is customary to grow some tall-growing crops between them. Pruning is indispensable in grape culture, and it is owing to the gardener's ignorance of this fact that vines which bear for some time are found to stop bearing afterwards."

In describing the method of

PRUNING,

it is recommended to allow three nodes in each branchlet, the shoot from the terminal node of these three being nipped off after having made sure that the other two nodes send off good, healthy shoots. The time recommended for pruning the grape vine is when the plant shews signs of wintering by the shedding of the leaves and by the dry grey appearance of the little branches. Time and space will not allow justice being done to this interesting chapter: but it may be mentioned *en passant* that the part dealing with the preserving of ripe fruit for transport contains most interesting and useful information.

The seventh chapter aptly commencing with an illustration of the four stages of metamorphic insects shows how plants are destroyed by them and suggests powerful remedies such as Paris green, London purple and other similar preparations which, owing to their poisonous character, have to be used with caution.

The concluding chapter on Live Stock treats not only of the more important species which are quadrupeds, but also of the various domestic fowls and birds, including the turkey and the pigeon. The commoner ailments of live-stock, their breeding, rearing, management, etc., are suitably treated of in this chapter.

Altogether the book contains a good deal of valuable matter covering over 200 pages and will well repay perusal. Notwithstanding the slight difference in dialect from Ceylon Tamil, its language is easily intelligible a simple style being used for the most part. The price of the book (twelve annas) places it within the reach of the poorest ryot, and it is to be hoped that the Tamil agriculturists of Southern India and Ceylon will not be slow to profit by the fund of useful information offered to them in such handy form.

No. I.—SNAKES ALIVE! A FATAL ACCIDENT IN COLOMBO.

Colombo, June 3.

DEAR SIR,—I can vouch for the following fatal results from snakebite in reference to enquiry from "Constant Reader" appearing in yesterday's *Ceylon Observer*—though the occurrence was nigh 40 years ago.

A son of the late Mr. H M Fernando, of Ferryside Mansion, Mattakuliya, lost his life by dropping from a cadju apple tree at "Crow Island" and alighting on a tic polonga or cobra—I am not sure which—when he was stung by the reptile—was brought across the river in a faint and died within two hours of his arrival at home. You will find this reported in the *Observer* of that period.—Yours faithfully,

RESIDENT.

TEA PLANTING IN THE CAUCASUS.

PLANTERS' ASSOCIATION OF CEYLON.

Kandy, 2nd June, 1900.

Sir,—I herein enclose copy of an interesting communication in reference to tea planting in the Caucasus.—I am, sir, yours faithfully,

A. PHILIP,

Secretary to the Planters' Association of Ceylon.

Colonial Secretary's Office,
Colombo, 31st May, 1900

Sir,—I am directed to transmit for your information a copy of a report by Sir Henry Cooke on the subject of tea planting in the Caucasus, forwarded to this office by the Right Hon. the Secretary of State for the Colonies.—I am, sir, your obedient servant,

(Signed) A. E. CLAYTON,
for Colonial Secretary.

The Secretary, Planters' Association, Kandy.

(Copy referred to.)

A report was lately read at St. Petersburg by Mr. I. Klingell, giving the first results of the experiments made by the Imperial appanage in tea-planting in the valley of the Chakva, on the South-eastern coast of the Black Sea. The factory on the estate was built in 1899 with exclusively English machinery. In July 1899 there were 55 dessiatines* under tea culture, mostly Chinese plants, specially imported from China. Three crops were taken during the year, yielding 27½ poods (1 pood=36 lb.) The best in quality was the second. Four funts of green tea-leaves were needed for one funt of prepared tea (1 funt 14½ oz.) In type, Caucasian tea resembles Ceylon of very good quality. According to experts it will find a good sale. The prices obtained are 1st brand R1·90 cents and 2nd R1·60 cents the funt. By the Spring of 1900 there will be 102 dessiatines under plantation and in the near future 126, and, if the results continue favourable they will be extended to 500. The further development should go hand in hand with colonization. With rational culture and proper protection from cold winds the crops should yield 600 funts per dessiatine, and not 400 as at present calculated. The plantations are expected to reach economic maturity by 1905, yielding by then a clear profit on outlay. But to effect the results desired there should be introduced a persistent and rational system of colonization, and technical improvements all round.

Samples of Chakva tea in London received a very favourable report, experts even doubting whether they came from the Caucasus at all, as it was supposed only brick tea could be produced there. The majority of those who tasted it found it satisfactory, and only with fixed tastes preferring Ceylon tea. But as the latter is developing by great strides in Russia (in 1895 the consumption was 2,000,000lb, and in 1899 over 10,000,000). The amount of Ceylon teas consumed in Russia of late years is 6,000,000lb in 1897, 11,000,000lb in 1898, 17,000,000lb estimate for 1899, there need be no fear of Caucasian tea ousting it from the market.—"Commercial and Industrial Gazette of St. Petersburg."

(Signed) HENRY COOKE.

* 1 dessiatine equal 2.7 acres.

PLANTING NOTES.

M. GUYON—Administrateur des Colonies, Tannanarivo, Madagascar, who has been learning all he can about British and Dutch Colonial Administration in the Eastern tropics, went home by the French mail steamer on the 15th June.

A COMPLIMENT.—A Publishing and Bookselling Firm in Paris, in ordering our *Tropical Agriculturist* for Brazil, adds :—

We have seen with pleasure your Books at the Exhibition. The Ceylon Exhibition is one of the most interesting of all.

SINHALESE CATTLE IN TRINIDAD.—We regret to learn from Mr. Meaden of the Government Farm, Trinidad—see his letter on page 42—that the importation of small cattle from Ceylon has not been a success. They were very carefully selected and looked a choice lot as we saw them at the Agricultural School grounds before their shipment.

JAVA CINCHONA.—From the extract on page 32, dealing with the latest official report on Java cinchona, it will be seen that the product is prospering, though not so much from artificial as natural manures. A substance, "Ricinus spectabilis," obtained from castor-oil presses, is said to be very beneficial for the growth of the tree. Proprietors of castor-oil trees, who are unaware of this, will do well to note the fact.

PLANTING IN NYASSALAND.—An interesting letter from our correspondent, Mr. Henry Brown, formerly of Dimbula and Matale, will be found on page 41. He gives us a good deal of information and speaks well of the prospects of coffee and of the Nyassaland Company's estate. Mr. Brown's Ceylon reminiscences carry him back to early days under the late Messrs. Ryan and Wm. Smith in Dimbula. As regards the spotted bug referred to by Mr. Brown, we learn from Mr. E E Green that it proves to be *Antestia variegata* var. *lineaticollis*, said to be a well-known coffee pest in Africa. The coffee leaves sent by Mr. Brown are certainly very fine.

INDIA-RUBBER IN BEIRA.—According to a British consular report, the planting of India-rubber and coconut trees has been seriously taken up in the Beira district, and should in course of time become a thriving and profitable industry the soil and climate being, in the opinion of experts, all that can be desired. The cultivation of economic plants and trees in the valleys of the Zambesi, Buzi, and Sabi Rivers has been an industry too long neglected. The fertility of the soil and its capacity to give good returns for capital expended has been long recognised, but until quite recently entirely neglected on a large scale.—*Planting Opinion*, June 16.

TEA MANURING AND SEVERE PRUNING CONDEMNED.

(From a Correspondent.)

"I am very much surprised at the manuring and pruning that is now going on in the island. To me it is burning both ends of the candle. You see fine tea cut down to the ground; the prunings buried and more or less rich manure put in to force the trees to give big yields, and, as far as I can learn, with loss of flavour, though an increase of yield. I see tea treated this way in the —— that to my thought, does not require manure for years, and I am not alone in this view. All very well to manure in the poorer districts to get an increase of yield, where estates can barely pay without; but in this fine district, with its splendid tea, to me, it is agricultural murder and must do in the end no end of harm. But what I most wish to find fault with is the extremely severe pruning tea is subjected to. I have seen tea hacked down to 6" or 8" with large Assam pruners, but often without any slope, and after a year or so you find rot right down the centre of the tree. This cutting is done for cheapness and to force a crop. I hear of fields abandoned, that a few years ago were subjected to this treatment, and that by a well-known V.A., who now says Ceylon tea will not last. No, I should say not. The whole of this treatment to me spells ruin."

[But then the ruin has been "lang o' comin": look at Mariawatte for systematic manuring and pruning, for instance—it goes on giving 1,000 to 1,100 lb. made tea per acre year by year and seems none the worse. Still there is no doubt room for considering what our correspondent srys above, in some other cases.—Ed. *T.A.*]

CATTLE SALE AT THE AGRICULTURAL SCHOOL, CEYLON.

The periodical sale of calves at the Agricultural Dairy Farm last month was not so well attended as usual nor the competition so spirited. This was partly due to the calves not being so well up to the mark. Some 14 were sold, including a cow and calf, chiefly to country native gentlemen, and the prices of the calves ranged from R22 to R50, the cow realizing R70. All were of the Scinde stock which does so well, both for dairy and breeding purposes at the Farm. Scinde cattle were first recommended to Mr. Drieberg by his Edinburgh schoolfellow, Mr. Mollison, now in charge of the Poonah Dairy Farm. Aden cattle seemed to be even more suitable; but they are very difficult to get. Mr. Rodrigo has now some 87 cows, 4 bulls and some 70 calves under his care on the local Farm and all look very healthy and in fair condition.

Unfortunately most of the villagers cannot afford the price of one of these calves. We would suggest that some of them be given away as prizes at Agricultural Shows or for meritorious conduct otherwise.

Nothing more has been heard of the Commission on the Agricultural School, of which the Hon. W. T. Taylor is Chairman, with Messrs. Ellis, Burrows and Willis. It is very questionable if it would be wise to move the School from the lowcountry and certainly it would never do to locate the Royal College, where the Agricultural and other connected Schools now stand. A prudent plan would be to retain the present institution and establish a Branch Farm and School near Heneratgoda, or Veyangoda, and indeed Mr. Willis might have a third branch near Kandy. As the improvement of farming and cattle in the *low country* is one chief object of the School and Farm, it would seem only reasonable to work under much the same conditions.

GUNS AND ELEPHANTS INUVA, CEYLON.

(From Mr. Baumgartner's Report.)

The number of gun licenses issued in the past three years was—in 1897, 248; in 1898, 202; in 1899, 514. Details are given in the Appendix.

The game licenses issued in 1899 were—to Europeans, 34; to others, 21.

Elephants were numerous in the Province. From my own observations I can speak to their prevalence in many localities: *e.g.*, in Wellawaya division near Kataragama, and again near Tanamalwila, where I saw two on the high road on the 24th July; also near Balaharuwa and Hambegamuwa in herds: also between Hambegamuwa and Kotaweramankanda they are numerous, and included a solitary elephant of large size known as "Kurakkan-hora." This elephant was sought after by a sportsman, but not found, for the jungle scene at the Paris Exhibition.

In Buttala division, with its immense unbroken stretch of forest, elephants are plentiful, and it was here, near the Kumbukkanoya, that sixteen elephants were captured under licenses in 1899. Six more were captured without license, but were allowed to be kept on payment of R50 each.

In Wellassa, not far from Siyambala Anduwa, I saw tracks of a very large herd on 2nd April. They are also fairly plentiful about Dambagalla and thence towards Nilgala. They are found in Bintenna and in Wiyaluwa within twenty miles of Badulla.

They do much damage to crops in outlying places. I have also seen about fifteen coconut trees in a poor villager's garden laid low and torn to pieces by elephants. This was at Ulwita in Buttala Wedirata.

Tea in Russia.—Some interesting correspondence—sent by the Planters' Association—will be found on page 46. The experiment in growing tea near the Caucasus need not alarm us any more than what is done in Natal, or in Carolina, U.S., by worthy Mr. Shepherd. It is, however, specially interesting to learn that the consumption of Ceylon Tea in Russia is increasing so rapidly as these figures show:—

1895	...	...	2,000,000 lb.
1897	...	...	6,000,000 ,,
1898	...	...	11,000,000 ,,
1899	Estimate	...	17,000,090 ,, (?)

COCONUT PLANTING AND WEATHER NOTES FROM THE N.-W.P., CEYLON.

MARAWILA, June 2.

It is a comfort to be assured, on so high an anthority as that of Captain Donnan, that we have yet to experience the "burst" of the big monsoon. Otherwise the prospect before coconut-growers, especially in the drier districts of the Island, will be very gloomy indeed. The rainfall we have had so far has been very deficient and has gone but a very little way to counteract the effects of the previous droughts (plura') on the north of Chilaw, before the rains of April. Water was not to be had for man or beast, except in the bed of tanks and of the Deduru-oya. A water-service had to be established for the coolies. Work had to be knocked off two or three hours earlier than usual on several days in the week and the coolies driven like cattle to the river to bathe and to wash their clothes, in order to keep them in health, a penalty being attached to those who did not go. The water-service for a bachelor's bungalow alone cost about six coolies a day. Rain fell heavily in April, four inches in one day, and about four times that during that month and yet the complaint is want of water. Those south of Chilaw were not so badly off for water as depicted above, as the lands are low-lying and the soil sandy and water nearer the surface, yet nearly 12 inches of rainfall in April did not saturate the soil below a few feet. May has been a dry month with us; rain has fallen on only six days and averaging a little over one-and-a-half inches, Under these circumstances it can well be imagined with what feelings of joy and hopefulness we read Captain Donnan's opinion.

It was only last week you repeated an oft made request for an Observatory for Ceylon It is passing strange that an omniscient newspaper editor did not then know that on the 24th May there landed in Ceylon from India a gentleman connected with the Meteorological Department of Madras. I heard him described as the Astronomer Royal of Madras. He had certain packages marked "Meteorological Department, India." Possibly he came over to take observations of the recent solar eclipse. [Which, if our correspondent had read the *Observer*, he would have known was invisible in Ceylon.—ED. *T.A.*]

SUGAR IN CEYLON IN DAYS OF OLD:

NEGOMBO, June 6.—The account of your visit to Baddegama, published in one of the back numbers of the *Observer*, in which you make reference to sugar cultivation in the Southern Province in the olden days, brought vividly to my recollection the attempted sugar industry in the Negombo District in the outlying villages of Katukenda, Petigoda, Delpakadawara, Dalupathgedera, &c., in the "forties." A French gentleman, named M. Chermont, acquired from Government considerable land in the villages mentioned, and, with the aid of the others, who I think formed a syndicate, parcelled them up in lots of hundreds of acres and commenced planting sugar-cane. Among the Superintendents were

MESSRS. STEWART AND FRASER.

The sugar plantation was carried on, on a rather lavish and expensive scale, the superintendents and others drawing very large salaries and horse allowance. The outturn of sugar was coarse and rather brown and I think it did not come up to the price first calculated upon. The whole concern went to smash in the end of the "forties" or beginning of the "fifties." I remember, as a boy, the large copper vats being carted from Katukenda, drawn by a large number of cattle and deposited near the Negombo Resthouse, where they were lying for sometime before removal to Colombo. The Company, after abandoning the sugar cultivation, sold up the land in parcels which fetched at the rate of *five shillings* the acre! These (about 3,000 acres) were all bought up by Hendrick Kure, commonly called Andris Baas, late of Moratuwa.

In one of these parcels of land, now owned by Lady De Soysa and called Katukenda Sugar Estate, might be seen the site of a former sugar mill. At the present time these lands are all flourishing coconut estates.—J. K.

THE PAPAYA AS A PROFITABLE CROP.

Now is the time to select large, well-formed fruit—*fruit that has ripened on the tree*—for seed. After consuming the fruit, select all the *dark-coloured* seeds, rejecting the rest; dry them in the sun, and sow in brandy cases, pots or pans, filled with leafmould and garden loam. When the plants are from three to five inches high, transplant singly into small pots filled with the same mixture. About the beginning of July put out into the permanent quarters the plants are to occupy. Here dig holes, ten feet apart either way, two feet wide and two feet deep. Fill these with well decayed cow manure and garden soil in equal parts, into which plant the seedings. Here they may be left to take care of themselves. They will grow apace most luxuriantly. When they begin to flower, watch should be kept for male and female trees, so that the male trees may be left alone, and attention directed to giving an occasional surface-dressing of cow manure to the female trees. The fruits usually set very close together; but they should be thinned out at an early stage, to give the others an opportunity of swelling and ripening. It is only by this means that you can obtain large well-formed fruit. The fruit ripens best during the hot, dry months of March, April and May. At this time heavy watering would spoil the flavour of the fruit; therefore, just sufficient water should be given to enable the fruit to swell. If you want good fruit, don't pluck till nearly ripe; then keep for 24 or 48 hours, according to the stage of ripeness, before using.

I was much struck by "Hortus's" remark in his article referred to above. He says: By a careful selection of seeds from male trees, which seem to have a special tendency for producing hermaphrodite flowers, I do not doubt that a variety could be produced in a few years in which this tendency should become fixed, and form the special character.

In the Calcutta market Papaya fruit realise from one anna to eight annas each according to size. A single tree, bearing from twenty to thirty fruits at an average of four annas each, would give a return of six rupees per tree. A plot of ground, 100 feet square, would carry 100 trees, which, at even an average of four rupees per tree, would give a return of R400, of which, say, R350 would be net profit. Here is something that promise to yield a good profit. —*Indian Agriculturist*, June 1.

THE OUTTURN OF THE MYSORE MINES.—The Director-General of Statistics in India having applied for particulars as to the quantity of gold in ounces and value in rupees produced by the Kolar Gold Mines from April 1899, to 31st March 1900. Messrs. Binny & Co., of Madras, have been requested by the Mining Board to furnish complete returns to the Director-General. The National Bank of India, Bombay, have been written to supply them with particulars of gold delivered to the Bombay Mint since January, 1900.—*Pioneer*, June 10.

"THE MANUFACTURE OF PLUMBAGO OR GRAPHITE":

IS IT TO BE ACCOMPLISHED "AS EASY AS SOAP" AT NIAGARA? ALSO THE MAKING OF REAL DIAMONDS EVENTUALLY?

We all know that the diamond and carbon are, in substance, identical. Indeed, this is practically true of the following substances which may all be put in the same category, and which owe their distinctiveness to different degrees of heat and pressure, namely :—PETROLEUM, PEAT, COAL, PLUMBAGO, AMBER, DIAMOND. A due amount of heat and pressure would have turned our plumbago into diamonds and made the Western portion of this island as rich a mining district as that of Kimberley. But today we have to deal with information which goes to show that there is a possibility of both plumbago and diamonds being manufactured on a scale that may seriously interfere with mining industries. Of course, the artificial, chemical manufacture of the diamond has been a very old threatened discovery; but we have not before heard of graphite being coupled with it, nor of operations on the large scale that is now revealed. We refer to a paper on "Hottest Heat and Electric Furnaces" by Sturgis B. Rand in the *Windsor Magazine* for May. We must say, in the first place, that if there was any immediate risk of graphite being economically and plentifully manufactured, an ever-watchful trade both in America and England would have had an inkling of what was approaching, long before the subject got into a monthly magazine, and we should have seen the result in altered prices. Still, although there is no immediate danger of the Ceylon Plumbago Industry being closed or even adversely affected by a manufactured article, which at first, at least, is likely to be both more costly and inferior in quality; yet we do not think the prospective manufacture is to be altogether ignored. It is an indisputable fact that the hottest furnaces in the world are now being operated by the Niagara Falls, and this is what Mr. Rand has to say of the result :—

Here clay is melted in vast quantities to form aluminium, a metal as precious a few years ago as gold. Here lime and carbon, the most infusible of all the elements, are joined by intense heat in the curious new compound, calcium carbide, a bit of which dropped in water decomposes almost explosively, producing the new illuminating gas, acetylene. Here also pure phosphorus and the phosphates are made in large quantities ; and here is made carborundum—gem-crystals as hard as the diamond and as beautiful as the ruby. Just now, too, an extensive plant is building for the manufacture of graphite, such as is used in making lead-pencils, lubricants, electrical appliances, stove-blacking, and so on. Graphite has been mined from the earth for thousands of years ; it is pure carbon, first cousin to the diamond. Ten years ago the possibility of its manufacture would have been scouted as ridiculous ; and yet in these wonderful furnaces, which repeat so nearly the processes of Creation, graphite is as easily made as soap. The marvel-workers at Niagara Falls have not yet been able to make diamonds—in quantities. The distinguished French chemist Moissan has produced them in his laboratory furnaces—small ones, it is true, but diamonds ; and one day they may be shipped in peck boxes from the great furnaces at Niagara Falls. This is no mere dream ; the commercial manufacture of diamonds has already had the serious consideration of level-headed, far-seeing business men, and it may be accounted a distinct probability.

As regards graphite, we repeat that, if it "were as easily made as soap," it is incredible that Ceylon plumbago should have recently been in unprecedented demand and at unprecedentedly high prices. Nevertheless, who is to dispute the possibilities of furnaces heated by electricity generated by the power of Niagara? We are told of one furnace so built that an amount of heat energy, equivalent to 700 horse-power, is produced in an arc cavity not larger than an ordinary water tumbler! As to the crystals or gems made, so great an authority as Geikie, the Scotch Geologist, was deceived : on being told they were manufactured, he exclaimed testily :—"These Americans! What won't they claim next? Why, man, those crystals have been in the earth a million years!" It seems to have been through the manufacture of the gems that artificial graphite was accidentally noticed. Thus we read :—

At the end of thirty-six hours the current is cut off and the furnace is allowed to cool, the workmen pulling down the brick as rapidly as they dare. At the centre of the furnace, surrounding the core, there remains a solid mass of carborundum as large in diameter as a hogshead. Portions of this mass are sometimes found to be composed of pure, beautifully crystalline graphite This in itself is a surprising and significant product, and it has opened the way directly to graphite-making on a large scale. An important and interesting feature of the new graphite industry is the utilisation it has effected of a product from the coke regions of Pennsylvania which was formerly absolute waste.

It is a pity that the opinion of a crucible-maker on the quality of the so-called graphite is not given. But Mr. Acheson, the investigator, confesses that there is much to learn yet of Nature's secret of great pressure in regard to "Diamonds" and the same may be true of "Graphite." Nevertheless, the potentialities of the "Electric Furnace" are, quite probably, beyond all present conjecture and we shall have more to say on the subject later on.

VANILLA.—Any one interested in Vanilla Culture should read the account of a successful experiment in Bengal recorded on page 52.

CACAO POD.—We have seldom seen a finer cacao pod of the yellow or Forestero variety than has been sent us by Mr. Drieberg from the Agricultural School. It is 9½ inches long by 14 inches in girth and weighs 2¼ lb., thereby beating the champion pod sent us some years ago by Mr. Drummond and recorded in our Directory's Planting Review. This is another evidence of how suited cacao growing must be for the majority of village gardens in the Western Province.

PLANTING IN LOWER PERAK.

This purely agricultural district is making steady progress. The revenue has again increased by 10 per cent., of which more than one half is due to a permanent increase in land rents. It will be remembered that some 14,000 acres were alienated in the previous year for sugar, coconut and rubber cultivation. In 1899 a further 640 acres were granted to Tek Kwi with 1,280 acres in reserve, and another 300 acres to Karmarasamy with a reserve of 200 acres, in addition to 1,056 applications for native holdings which were entertained for an area comprising some 7,000 acres. I have said that this is a purely agricultural district and so it has always been, but during the year 18 applications, comprising some 275 acres, have been lodged for mining land at Pasir Laut, marking a quite new departure in the development of this district. The opening of Mr. Turner's new estate of 1,100 acres is making great strides. —*Official Report.* [This is the new Sugar Plantation of Mr. Turner's Syndicate who mean one day to try sugar in North-East Ceylon.—ED. *T A.*]

KUALA LUMPUR.

It was not anticipated, as a reference to last year's report will show, that any substantial rise in the reveuue of this district would take place, nevertheless the revenue for 1898 was slightly exceeded in 1899. The depression in agriculture, particularly as regards products cultivated under European supervision in Selangor, is a matter of common knowledge, and it is therefore gratifying to find that rents on European estates have not fallen into arrears, with one exception.—*Official Report.*

KUALA SELANGOR.

This district does not show such encouraging results. The revenue not only fell far short of the estimate, but was less than that collected in 1898. The Collector of Land Revenue explains that rent and arrears, amounting to $2,443, were not paid on one large estate, but I cannot reconcile his statement that this sum will become payable in 1900, with another to the effect that the total arrears brought forward into the 1900 rent rolls amount to only $331.20. Possibly there is some special arrangement of which I have not been informed. A sum of $349 has been written off as irrecoverable. Licenses show an increase, but estimates for this district appear to have been somewhat over-sanguine. The cultivation of coconuts is largely on the increase, but wild pig are doing enormous damage. The District Officer says: "The Selangor Coconut Oil Company Mill has been in working order throughout the year. This district does not supply sufficient copra to enable the factory to keep going, but a certain amount is imported into Kuala Selangor from Jeram, Bernam and Telok Anson. I understand from the Manager, Mr. R S Meikle, that there is a ready sale for the 'poonac,' the refuse of the copra when the oil has been extracted. It is used for feeding horses, cattle and pigs, and is, I believe, extremely nourishing. Most of it is shipped to Australia, but a portion is sold locally and in Kuala Lumpur." I agree with the District Officer that it is a question whether the Government should not offer special advantages in order to encourage European capitalists to take up land in this district for sugar and other products similar to those grown in the Krian district of Perak.—*Official Report.*

A VISIT TO HULTSDORP MILLS.

THE NEW DEVELOPMENT IN MANURE WORKS, CHEMICAL LABORATORY, &c.

Hulftsdorp Mills were probably the first established in Asia for the manufacture of coconut oil, coir-matting, etc. The late Mr, David Wilson may be said to have been their founder, and the "Price Candle Company" had at one time a good deal to do with them. They afterwards became the property of Messrs. Antony Gibbs & Sons, of London, who, in 1885, appointed Messrs. Freudenberg & Co.—at that time a Colombo Firm of twelve years' standing—their Managers and Agents. So much by way of introduction to the following:—

Comparatively few residents in suburban Colombo are aware of the large extent of ground covered by the mills and storehouses of Fort firms, in the region alongside the canal between the Kelaniganga and St. Sebastian; establishments of which the largest and oldest is so well-known by the name Hulftsdorp. Of such mills there is none, moreover, more extensive or more picturesquely situated than this one, which is owned by Messrs. Freudenberg & Company, occupying as it does an area of fully 12½ acres, across an interesting bit of water as one approaches from Maradana. The mills are bounded by the canal along which produce, firewood, etc., are brought by natives for disposal to the mills. Several landing jetties are visible, and the selection of one of these, whenever there are goods to be deposited, is made by the authority in charge, according to the location of the store to which the produce will be transferred.

Calling the other morning, soon after 6 a.m., at which hour Mr. Walter Freudenberg is accustomed to go his rounds, our representative was shown over the various buildings by this chief representative (in Ceylon) of Messrs. Freudenberg's well-known Firm, accompanied by his able assistants—Mr. Brandis, who is in charge of the Hulftsdorp buildings, and Dr. Koller, the expert German chemist, late lecturer at Geneva University, who superintends the numerous chemical operations which are constantly being required.

Over the khaki-coloured gateway, one's attention is arrested by the date 1835 at which

THE FIRST MILLS

were built here—before entering the actual precincts. Before us was a large open space, looking comparatively quiet, no shipments of goods being at the moment in progress, but one which is bounded by a long array of warehouses and stores full of produce ready for sale or shipment. Across this we proceeded to inspect a new 400 horse-power engine, made by Messrs. John Fowler, of Leeds, the biggest mill-engine of its kind in Ceylon. It was put up in a remarkably short space of time, only 17 days being spent in the job—the foundations having been carefully prepared; the latter gave some trouble, both rock and water being found at no great depth. This engine was erected in

order to work the oil-crushing presses which are found in an adjoining room; these, however, were temporarily out of use, pending the arrival of new crushing machinery.

From here we were shown the first long store of manure material, down the centre of which runs a toy tramway, where coolies were in course of piling up and then moving a trolley-load of full sacks. Sacks were piled nearly to the ceiling in every direction, containing pretty well every ingredient known, at least to the intelligent novice in agricultural chemistry—fish, bones, patent steam bone dust, bonemeal, rape seed cake, sulphate of potash, basic slag, sulphate of ammonia, nitrate of soda (a first shipment, by the way), nitrate of potash, muriate of potash, sulphate of iron, saltpetre, etc., etc.—20 substances in all, so the foreman stated.

There is, we believe, an impression abroad, amongst a portion of the planting community, that

CHEMICAL MANURE MANUFACTURERS

like Messrs. Freudenburg, will only supply prescriptions of their own and will not reveal the contents of the manure supplied. This may be the way with some, but, in the case before us, a visit to Messrs. Freudenberg's Hulftsdorp Mills would entirely remove such an impression. Here is an exceptionally large variety of chemical materials, ready to be made up according to any prescription the planter-proprietor or superintendent may desire, or may—from his own or others' experimental knowledge—have seen fit to apply; and, further, (the more frequent method) according to any of Messrs. Freudenberg's tried formulae, which is always communicated to the recipient whenever required. In all this immense store, to which we have just referred, contained no less than 2,500 tons of chemical substances from which to draw from. In another spacious shed, on the site of an old soap factory, we passed through dense piles of sacks of castor-cake and bones, stacked ready for crushing. With regard to the bones, we should add that quantities are placed in large iron cylinders through which steam passes and renders the bones quite soft, reducing them to a crumbled state like that of broken shells on the seashore. The bone material is then ready for final crushing which produces the fine patent steam bone-meal, a favourite ingredient in manure mixtures owing to the fact that it decomposes in the soil more readily and thoroughly than almost any other. Near to the steam-fed cylinders is a 40-horse-power steam engine which works a powerful grinding machine, used for reducing castor-cake to the finest powder; with the various sieves provided upon it, the cake is divided very finely. This immense "crusher" disposes of as much as 40-tons of castor cake in the day.

From here one passes into the specially

ODORIFEROUS ROOM, THE BONE MILL,

where a cigar, with or without a scented pocket-hankerchief, is felt to be a great, if not an absolutely necessary boon. For this is the room in which fish and bones are crushed.

Until lately "manure" fish had been easily obtainable from the Indian Coast in large quantities, and so popular among planters was the manure containing fish, that orders amounting to 200 tons had been on the firm's books at one time. But lately, plague regulations have interfered with the supply of this fish and for some time it has been unprocurable. Recently, however, imports of edible fish having proved excessive, native speculators had brought small quantities for sale at the mills—of their superfluous stock; at first this was tentative, but the price obtained being satisfactory, further supplies had come in and to some small extent the lack of "manure" fish proper had been temporarily remedied.

It was interesting to watch the steady way in which the coolies went on poking away at the bone material (assisting its passage as it passed along the pipes into the crushing machines); others, handling fish, were quite heedless of odours disturbing to the more sensitive European as he pays but a butterfly visit. Looking back, the air appeared rather cleaner than might be expected where so many dried and separating particles were being set in motion; but we were informed that the atmospheric excellence was due to a fan, put up by Mr. Maguire of the Sirocco Works, which carried off a large quantity of the dusty impurities of the air and lessened the objectionable smells considerably. In reference to fish manure we were informed that one favourite receipt used to run as follows:—

$\frac{3}{5}$ fish
$\frac{1}{5}$ bonemeal
$\frac{1}{5}$ castor cake

The next move, after visiting a landing jetty where copra brought down the canal could be landed under shelter, ready for transport to the store selected for it, was made in the direction of

THE LABORATORY.

Here we were struck not only with the cleanliness of the whole department, but with the convenient arrangement of the various shelves of chemicals and with one or two special apparatuses, such as are not found in any but experimental rooms where the most accurate work is required; there were one or two revolving holders for bottles the contents of which required to be mixed. Another elaborate apparatus stood apart, for distilling water, according to latest improved methods. Most delicate of all, however, were a special set of scales, of a mechanism sensitive to the last degree, kept in a glass case and regulated by a series of screws working from different points, and weighing—to the 1—10,000th part of a gramme! Dr. Koller has evidently the means and the ability to carry out every description of work appertaining to the Chemical Analyst, and not only soils but products and parts of growing plants should be sent his way. Analyses of soil are made here free of charge and every planter is able, by having the soil of the estate analysed, to apply such manures as are most suitable for that particular soil. Dr. Koller gives all information that buyers or intending buyers of manures may wish to possess and advises them as to the mixtures required. Any soil can be analysed and the

planter can be advised for what produce the soil is most suitable.

From here our way lay by

THE COOPERS' YARD

where scantily-clad athletic Sinhalese, were busy,—some, moving round blazing fires, hammering hoops downward around the staves that bent before this pressure and under the influence of the flaming heat within, while others were attending to casks in various stages of construction and engaged in testing the reliability of the finished casks. These were, of course, intended to hold coconut oil and a little further an immense yard was covered with huge oil-casks all more or less seasoned. It takes about six weeks for a cask to be thoroughly seasoned and tested. Many of the new casks are out in the yard a very short time before the oil penetrates between the fissures and parts of the surfaces shew the exuding oil: the casks are then marked by the inspector to be "pumped" and this is done into another cask by means of a hand-pump. The working of this hand-pump is only performed by natives of considerable muscular power, and the suppleness of their arms and wrists are brought into full play as the required twist is given to the instruments as they are raised and lowered with wonderful evenness. The unsound cask is then taken to have its bands tightened.

From here we made our way back to the entrance at one side of which was a small building devoted to

COIR WORK.

In the verandah door-mats were being made, while inside, in the nearer room, matting was being pieced together, and in the further the hand looms were at work, producing the matting material that is used for special carpeting and also for ordinary matting. Bags were being made out of the matting. These, we were surprised to learn, were in increasing demand, as they were taking the place of the large baskets for bringing tea leaf on the estates along wire shoots. There is much to be said for the new article, perhaps even as leaf-holders on the backs of pluckers in the field? They are probably cheaper and are at any rate far easier for transport in an empty state.

Proceeding to the opposite building, where the mill offices are situated, we were shown various specimens of extra refined coconut oil (such as one sees at very few Shows, even) and, in the course of further conversation, learnt more definitely of the magnitude of the work carried on. The acreage of the ground covered, as we have already stated, was not far short of 13 acres; while as to the number of natives employed, we may state that in the oil mill alone, when it is in full working order, there are no less than 200 hands engaged; while about 200 more find employment in the other Departments. We left Messrs. Freudenberg's Hulftsdorp Mills with an increased sense of the importance and practical usefulness of the large and varied work being carried on there, both to the native and the planting community.

Before modern scientific manuring was introduced by this firm in 1897 and notice taken of it in an article in the *Ceylon Observer* that year, there were used in Ceylon for manuring purposes almost alone:—

Castor cake
Patent steamed bone
Bone meal and
Fish maunre

—a list which contrasts well with that of the substances used today, which we have already detailed.

The Firm is sole agent in Ceylon for the United German and Austrian Thomas Phosphate Works—the largest concern of its kind in the world,—and also for the United Stassfurt Potash Works, which are by far the largest manufacturers of potash salts in the world. It is, therefore, naturally in a position to provide the best and cheapest basic slag and potash salts. The planter has many a want supplied by the produce of the Hulftsdorp Mills, from reliable manure, made precisely to his order, to the tea bag—used for estate transport, but perhaps some day to relieve the pluckers' baskets in the field; whereas the native curing his copra around his jungle home may always be certain of a ready sale of his goods when brought to the large mills of Messrs. Freudenberg at Hulftsdorp.

VANILLA CULTIVATION IN BENGAL.

A SUCCESSFUL EXPERIMENT.

During these last few years attention has been greatly drawn to products which were likely to succeed in India and give satisfactory results. The cultivation of Vanilla has been taken in hand more than once, but somehow it has never had, really speaking, a thorough trial; the trial was not carried on long enough, although it was shown that this plant grows and fruits in Bengal without any difficulty. The experiments in the Alipore Gardens have not been carried out on such an elaborate scale as were attempted in several places in Bengal some years ago: in fact the plants were here growing almost in a wild state in a mango grove, and such as they were, they served all the more to show what little trouble there is attached to their cultivation. This experiment has been conducted under the above-mentioned conditions just to show that anybody possessing a grove of mango trees can raise a crop of Vanilla without any further expense than the purchase of the plants to form a stock. In the gardens the Vanilla was planted at the base of the trees in good leaf mould, mixed with plenty of brick refuse, as drainage for the young plants; one put down they practically grew at their own sweet will, and soon attained fine vigorous growth. If this was done with a view of continuous production, the plants should not be allowed to grow over a certain height, say fifteen feet, as a maximum; if allowed to climb higher up, the work of fertilising the flowers would become almost impossible. Last year, in the beginning of March, the plants showed their flower buds, the plants then were occasionally syringed, and by the 10th April the first flowers were fertilized. At the end of that month the flowers, which had set, looked dried up but still stuck to the pods, which were then beginning to lengthen out.

The main thing in growing Vanilla is of course the time when the flowers must be fertilised. This has to be done artificially. If left to themselves, perhaps, not one in a thousand would give a pod. This operation is thus of the greatest importance, and should be done very carefully: on it depends the whole result of one year's trouble. The *modus operandi* can, of course, better be shown than described, and it requires a little practice and a steady hand before one can do it quickly without spoiling the flowers or losing the pollen, etc. One must first of all prepare a

little piece of bamboo cut into the shape of a toothpick: in fact, I have done the fertilization with this last named article and it answered admirably.

The anatomy of the Vanilla flower is somewhat different from the general run of other Orchid flowers. At the extremity of the gynostemium there is a little cap covering the pollen; the first operation is thus to lift this cap and carefully take the pollen masses out on the end of the toothpick. Beneath this first receptable is another little lip covering the stigma; under this lip will be found the stigma covered with a sticky liquid. The second operation consists in lifting this lip with the very point of the toothpick, holding already the pollen; then, when the stigma is fully exposed, by a gentle twist apply the pollen on to it. When one has repeated this operation systematically a few times, it is really wonderful how quickly one can perform it. The segments of the flowers should be drawn well back so as to facilitate the operation, and held with the left hand together with the ovary; the operation of applying the pollen should be performed with the right, at the same time join the tips of the little fingers to steady both hands.

The pollen adheres very firmly to the stigma, and when once properly applied, there is little chance of its falling off. After the operation of fertilizing has been attended to, very little remains to be done. Nature then takes the matter in hand, and one has but patiently to wait the further development. The first sign by which one can detect whether the flower has set to fruit, is the way in which the segments stick to the top of the ovary. If not successful after a day, perhaps, a couple of days, these segments drop, leaving only the ovary, which soon drops in its turn. The pods after the first two or three weeks grow very steadily and attain their full size about the beginning of November. Then they gradually begin to lose the bright green colour, and by December the nose of the pod turns yellow first, then slightly brown; this is the time to gather the pods. The plucking of course must be done every day, for all pods do not ripen at the same time, and only those that part easily from the flower stem should be taken down.

After the gathering comes the curing. Having only a limited number of pods, they were sundried, wrapped up in woollen cloth, which I found answered very well. The pods developed a fine aroma and soon assumed that dark chocolate tint which I believe is recognized as very good.—A. J. B. GISSELEIRE, Superintendent, Agri-Horticultural Society's Gardens, Calcutta.—*Indian Gardening and Planting*, June 7.

FRUIT FARMING IN MYSORE.

In a recent official report, Mr. John Cameron commented on the backward condition of Fruit Culture in the Kadur district, remarking:—"With the exception of orange trees, which are found on some estates, fruits are not abundant; nor did I observe any organised attempt to grow this class of produce in quantity. Mr. Kirwan has in his fine garden at Santaveri a number of fruiting plants such as pineapple, strawberry, peach, orange, hill-gooseberry and banana. But they are grown on a limited scale, and more to represent their class than with a view to economy." As, however, "most of the kinds were growing well," there is no apparent reason why fruit farming should not prove a very useful adjunct to coffee-planting in Kadur. The inimical factors are said to be (*a*) the length of the monsoon accompanied by dense fogs and much cloudy weather; (*b*) the prevalence of fruit-eating birds, and (*c*) the pilfering habits of estate coolies. The first is a difficulty that may prove insurmountable in some places, but there are certainly remedies for (*b*) and (*c*); and we do not believe that any planter eagerly bent on pushing fruit cultivation would allow himself to be deterred from carrying out his plans by either feathered or human biped. The true difficulty appears to lie in finding a market. As things stand at present, there is not bulk enough to secure a minimum of transport expense, nor enterprise enough to set about *making* a market. Referring to this point, Mr. Cameron remarks that fruit must either be preserved on the spot, or conveyed by rail to the cities on the plains. In this connection it may be observed that, although there is at present no factory for the manufacture of jams and preserves on a large scale, one would probably soon be forthcoming if a sufficient fruit supply could be assured at a convenient centre. Then, too, there are well-known methods of drying fruit; while fruits such as oranges, apples, etc., are easily transportable to even distant places.

The orange itself affords perhaps the best proof available of the general indifference manifested with respect to the cultivation of fruit. In Kadur Mr. Cameron only found one variety, the "Coorg loose-jacket." Good as this is, we are not surprised that Mr. Cameron should suggest the introduction of other good varieties, such as the Seville, Malta blood and St. Michael's. Variety would certainly give an impetus to demand, and moreover it is fairly certain that all the above varieties would not ripen at one time, so that the measure suggested might lengthen the "season" during which oranges are obtainable. Mr. Cameron further recommends for cultivation in the drier parts of the hill zone (that is, the eastern and southern faces of the lower hills having a rainfall of 45 to 80):—

Apple	Dwarf bushes or maidens imported from California, Italy and Japan.
Peach	Ditto from Florida, Italy and Japan.
Plum	From Malta and Japan.
Pear	From California, France and Italy.
Mulberry	From Japan and China.
Pineapple	From Ceylon and Singapore.
Fig	From Southern Europe and Turkey.
Raspberry	Best English.
Strawberry	Ditto.

He remarks that raspberries and mulberries would stand a good deal of rain and cloudy weather; but in regard to fruit culture generally he considers that operations should be confined to the drier parts of the district, where there is elevation, in addition to shelter and means of irrigation. Many positions of this class would possibly be found on the lower slopes of the Baba Budans facing towards the east and south; but more particularly amongst the smaller hills dwindling down in the same direction to the plains. Except for oranges of sorts, the western portion of the district is too wet and gloomy during several months of the year. In addition to the exotic plants already recommended, the following novelties are mentioned for trial:—

Loquat	..	Eriobotria japonica
Sapodilla plum	..	Achras sapota
Litchi	..	Nephelium litchi
Alligator pear	..	Persia gratissima
Parangi	..	Carica Papaya.

He did not observe any spot sufficiently tropical and sheltered, as at Burliar on the Nilgiri ghat, for the cultivation of the Durian and Mangosteen. Neither are there suitable localities for the fruits of cold temperate climates, such as cherry, gooseberry, currant, etc.

As to conditions of cultivation, Mr. Cameron gives the following practical advice:—"A fruit garden should be fully exposed to sunlight. The land should be fairly good to start with and should be entirely free of roots from adjacent trees or crops. A sufficient water-supply must be available at a higher level or in wells to irrigate the whole of the garden. Land chosen for fruit culture should, in preference, be of the calcareous class. It may be level throughout or terraced. Very steep land is undesirable, and in cold situations a southern aspect is best. By efficient systems of drainage, and the judicious application of suitable manures the land would soon improve in quality. But it must not be forgotten that fruit crops are exhaustive to the soil in proportion to their outturn and duration. Therefore, the richness of the soil has to be carefully maintained as long as the production of fruit continues. The first operation, which consists of

trenching the land to a depth of 2 to 3 feet, reveals the nature of the subsoil and usually decides to what extent artificial draining is necessary. Subsoils of gravel, laterite, and sand would mostly afford natural drainage, except where the situation is lower than its surroundings. Drainage is most necessary in the case of a stiff clay. Fruiting plants are impatient of stagnant moisture at their roots. For this and other reasons the latter should be kept as near the surface as possible. It is only in the case of large trees, such as the coconut and jak, that deep land is needed for the cultivation of fruit.' Mr. Cameron concludes this interesting section of the report under notice by saying that all, or nearly all, the indigenous fruits would succeed in the *maidan* part of the district. The hog-plum, *Spondias magnifera*; hill-gooseberry, *Physalis peruviana*; Korinda, *Carrissa carandas*; and at least three species of Rubus (raspberry) were commonly found all over the hills. Bananas and plantains are not uncommon in the hamlets skirting the paddy-fields up to 4,000 feet.—*Planting Opinion.*

UNITED PLANTERS' ASSOCIATION (FEDERATED MALAY STATES).

[EXTRACTS :] LATEST MEETING, MAY 7TH.

COFFEE.

The CHAIRMAN said that at the general meeting held on 14th August last the Association had expressed its cordial approval of a scheme for stimulating the consumption of coffee, proposed by the *South American Journal*, and he had written to the Editor to that effect. Subsequently, the Editor abandoned his original suggestion and proposed instead that a coffee roasting company or syndicate should be formed and invited our Association to take shares and supply coffee. This matter was considered at a Committee meeting on 12th January last, and it was decided that the Chairman should write and inform the Editor that we were not in favour of this idea and could only support the original proposal, which had been done. In an editorial on 17th February, 1900, the Editor expressed his pity that we should have come to such an important conclusion, especially after the arguments he had advanced, but we have our own opinion on that point and there the matter may rest.

Mr. T H HILL had written several letters to the Hon. Secretary, on the subject of sending regular supplies of coffee to Messrs. Sanderson and Company in London, with the view of bringing our coffee more into favour, and after consideration by the Committee the Chairman was asked to write to Messrs. Sanderson and Company on the subject, at the same time sending samples of machine-dried and sun-dried coffee and asking their advice as to which was most suitable. This the Chairman had done, having sent two samples of machine-dried and two samples of sun-dried coffee, and nothing further could be done until we heard from Messrs. Sanderson and Company. Mr. Hill had also suggested that a small shipment of coffee should be sent to Aden and had taken a great deal of trouble to arrange for the treatment of the coffee there. The Committee thought favourably of the experiment, and the Co-operative Coffee Trading Company, Port Dickson, were prepared to arrange for the shipment. It was, however, stipulated that a sample of the coffee sent should be submitted to the United Planters' Association Committee, and also that the coffee should be submitted to an expert in London before being handed over to the Kajang Coffee Company for sale. The Chairman said he thought this a matter which the Association might well take up, and it was for the meeting to decide as to guaranteeing payment for the coffee or not. After some discussion, it was resolved unanimously that the Association should guarantee the payment.

RUBBER.

The CHAIRMAN said there had been an idea that it would be a good thing to send a practical man to Brazil to enquire into the Para and other rubber questions, and he had been asked by the Committee to write to the newspapers on the subject, which he did. The article had been favourably received, but since then he had met Mr. Michie, a well-known Ceylon gentleman, who had spent about a year in Brazil, and his opinion was that there was nothing to be learned by going to that country and any money could be much better spent here. The whole of the system of tapping and curing was carried out in a crude and primitive way and no cultivation was attempted. Mr. Coates corroborated what Mr. Michie had said, as he was in Brazil with him when he made the enquiries. Mr. Bailey said he, also, was of opinion that we could spend the money much better by experimenting ourselves on trees in the Malay States and the Colony. The Chairman said he was also of that opinion, particularly as a qualified man from Kew would soon be available to carry out such experiments, and in the meantime the Committee had instructed the Hon. Secretary to write to the Resident-General's Office asking them to get all possible information about Para rubber and gutta rambong—such as method of tapping, yield, etc.—and suggesting Sumatra as a likely place to get information about rambong.

PROSPECTS.

The CHAIRMAN said: Coffee was higher than last year, and, although there had been a slight drop in the market lately, the opinion of those in the trade was that the present depresssion could not last much longer. Rubber of all kinds was doing well in these States and coconuts also promised to be a good source of revenue. Our labour market was in a better position than it had ever been, no doubt greatly owing to the Indian famine, but they had also to thank the Resident-General for what he had done for them in connection with the extension of the cheap-ticket system and the importation of labour by Government for Public Works. The Experimental Garden and Agricultural Department had been, at last, brought to a definite conclusion, and they had also to thank Sir Frank Swettenham for what he had done for them in this matter. As they would see in the report, there were now 95 members on the roll, against 99 last year, and he regretted to say that Perak was responsible for this falling off, their 16 having dwindled away to two. He hoped that Perak would soon reconstruct their district Association.

Mr. E. V. Carey was re-elected Chairman, and as Mr. Tom Gibson could not stand again, Mr. M. Sidney Parry was elected Hon. Secretary.

GUTTA IN THE STRAITS.

THE NEED OF PLANTING AND PROTECTION.

(*From Pahang Administration Report for 1899.*)

The gutta percha producing tree (*Dichopsis gutta*), known locally and in Singapore as "getah taban merah," is the one most in need of protection. It is a very slow-growing tree, and, when it has obtained a girth of three feet in circumference, which it takes about thirty years to do, it yields about two katies, or 2⅔lb. of gutta, and the collection of this involves the felling of the tree. It is an essential material in the construction of submarine cables, and it is only to be found in the southern part of the Malay Peninsula, Sumatra and Borneo. It consequently commands a much higher price than any of the other guttas, and, for this reason, is much more liable to extermination. It is laid down in the Farm Rules that no trees of less than three feet in circumference are to be felled, but it is almost impossible to enforce this rule, and there is no doubt that a large number of immature trees of less than the prescribed girth are being destroyed. Recently, a system of rewards for information leading to a conviction for breach of the rules has been introduced. It is probable that this, when it becomes well known, will prove more efficacious in preventing the felling

of immature trees than any other method yet tried, but it is not likely to put an entire stop to the practice. Though saplings still exist in large numbers, there are very few fully matured trees. In fact, up to the present time, I have not met anyone who can show me one anywhere, except in the very remotest parts of the State. If these are felled and the younger trees cut down before they are old enough to bear seed, the jungle will, in a few years, become entirely denuded of these valuable trees, and the greatest care will have to be taken to prevent this. In an earlier paragraph of this report I have alluded to the probable necessity of prohibiting, for a term of years, the collection of gutta, after the expiration of the present Gutta Farms in July next; but, though such prohibition is likely to be desirable, it may prove quite impossible to enforce, except at very great expense.

The above facts all point to the necessity of opening large plantations of "taban" trees. Unfortunately, owing to the tree being such a very slow-growing one, it is not a form of planting that could be profitably pursued by private individuals or firms. It must, therefore, if it is to be done at all, be undertaken by the Government. Gutta from Pahang commands a higher price in the Singapore market than that from any other part of the Peninsula or elsewhere. The climatic conditions and nature of the soil in Pahang appear to be more favourable to its growth than are those of the Western States. It would, therefore, most probably be the best State in which to commence planting gutta percha on an extensive scale. As Pahang does not possess the funds requisite for this, it might with advantage be made a Federal charge, each State sharing, in proportion to the amount of its contributions, in such profits as might eventually accrue.

PRODUCE AND PLANTING.

THE TEA TRADE OF JAPAN.—The tea trade of Japan cannot be considered as flourishing. Mr. A. H. Lay, the British Assistant-Consul at Tokio, in his report on the trade of Japan, gives some interesting information in regard to the tea industry. The quantity of tea exported from Japan during 1899, he says, exceeded that shipped abroad during 1898; but all the same the tea business in Japan is becoming more and more unsatisfactory each year, and, for the foreign merchant, at any rate, there is, little or nothing to be made out of it. In quality the tea of 1899 compared unfavourably with the crop of 1898. The practice of picking the young leaves in the early spring before they are properly matured, for the sake of obtaining exorbitant prices for small quantities, is undoubtedly having a very injurious effect on the plants, and it is surprising that Japanese tea growers do not realise this fact. But it is not only from the effects of the injudicious system of picking that the Japanese tea industry is suffering. The trade with Canada, Mr. Lay points out, is appreciably affected by the competition of the Ceylon and India growers, who, by extensive advertising and other methods, are bringing their produce prominently before the public. The Japanese, on the other hand, are making no efforts whatever to advance the sale of their teas, and as Ceylon green teas are now making their appearance in Canada, where their sale will be vigorously pushed, the future of Japanese tea in that market cannot be regarded as bright.

THE TEA TRADE OF ICHANG.—A Consular report states that the trade of Ichang, China, is entirely with native treaty ports. There is no direct foreign trade. Exports include tea, which is prepared for export at the place of production, Ta-ch'i-k'ou, about a hundred miles west of Ichang; 74,800lb. of this tea were exported to Hankow, but resulted in a financial loss. The advent of steamers to run between Ichang and Chung-king is expected to increase exports from and ultimately imports to Chungking, and thereby increase imports into and re-exports from Ichang.—*H. C. Mail*, June 1.

SCIENTIFIC MANURING.

Four years ago we wrote as follows on this subject:—

There is, perhaps, no direction in which money can be more easily wasted in connection with the cultivation of tropical products, than in the purchase and application of manures. Not only should the fertiliser purchased be tested by the analyst; but also the soil to which manure is to be applied. Not only does the soil of one district differ from another; but it may be that adjacent plantations require very different treatment. But there is the great temptation among planters to follow some one particular lead; or there is the feeling that for Ceylon tea bushes. "bones and castor-cake or fish manure" cannot fail to do good. Possibly not; but it is equally certain that a previous examination of the soil might supply information which would lead to considerable economy or to a great deal more lasting benefit from the application of fertilizers.

At that time, the supply of fertilizers according to scientific investigation was in its infancy amongst us and we believe not more than four distinct substances were in use. The great advance made in the interval will be best understood from a perusal of an account of a visit to the Hulfsdorf Manure Establishment and Laboratory, which is given on page 50, and which, we feel sure, will be perused with interest, especially by planters.

PLANTING NOTES.

GUTTA PERCHA.—The Straits authorities are awaking to a sense of the need of protecting their very profitable gutta-yielding tree (*Dichopsis gutta*) and also of putting out trees on special plantations of the same. We refer to interesting remarks on the subject from the Administration Report on Pahang, given on page 54.

RUBBER IN SUMATRA.—Gutta plantations have largely been started on the East Coast of Sumatra. The Russian-American India Rubber Company have just begun operations there. The Tanah Priok Cultivation Company now follows suit. It proposes to grow rubber on a scale sufficient to admit of 240,000 trees being available in seven year's time. Rubber grows wild in large quanities in East Sumatra.—*Straits Times.*

SUN-FLOWER OIL.—We have at times drawn het attention of our readers to the commercial value of the cultivated Sun-flower, and have advocated its being planted out on waste plots. We now learn from a Russian chemist that the plant is extensively cultivated in Russia, which produces nearly 300,000,000 pounds of seed from 216,000 acres. The seed yield—oil and seed cake—is good food for poultry, and the flower produces a yellow dye, honey and wax. Potash is derived from the stalks, which are also used as fuel. Cigars are made from the leaves, and it is claimed that the plant is a preventive of fevers, and is at the same time a good cattle food. The oil is pale yellow in colour, thicker than hempseed oil, flavourless but palatable. Mr. Machalske obtained from 1,300 lb. of seed kernels 34 per cent. of raw oil having the appearance of the best qualities of refined cotton seed oil.—*Indian Planters' Gazette*, June 2.

M. PRUDHOMME—our French Agricultural visitor (Director-General of the Department in Madagascar)—left for Europe by the French mail-steamer last month. He has now been travelling for six months, visiting Java, Sumatra, the Straits Settlements, Ceylon and Calcutta; but he comes back after a couple of years, to give some weeks or months to India by itself.

TEA PLANTING AT MALACCA.—A Colonial Office Report, from Singapore, on planting in the Straits Settlements, says that a good tea plantation has been thoroughly established in Malacca, which finds a local market for its produce. An enterprising syndicate of Chinese has taken up the business.—*Pioneer*, June 20.

NEW DUTIES IN FRANCE.—The new French duties to come into force on 1st September bear very hardly on Ceylon produce, and the doubling of the tax on tea will go far to destroy any benefit that might have accrued to tea industry from the Paris Exhibition. The Ceylon Association is in communication with the Colonial Office on the subject, and it is understood that the London Chamber of Commerce will also take the matter up. The enhanced rates are as follows :—

					kilos.
Coffee	from	156 to 300	francs	per	100
Tea	do	208 to 400	do	do	100
Pepper	do	208 to 400	do	do	100
Cloves	do	208 to 440	do	do	100
Shelled Nutmegs & Mace	do	312 to 600	do	do	100
Vanilla	do	416 to 800	do	do	100

—London Cor., local "Times," communicated.

[The new French Duty on tea will, therefore, be a fraction over 1s. 6d. per pound !—ED. *T.A.*]

A FRENCH "PLANTERS' ASSOCIATION,"—In a recent issue of the Tonkin French paper *L'Avenir du Tonkin*, we notice that a "Syndicate of the Planters of Tonkin" was about to be formed. From the proposed rules of the Syndicate, subscribed to by a membership of 91, we learn that its object is to centralise at the headquarters of the Syndicate information of every kind, documents, specimens, &c., and to bring mutual assistance to the planters and facilitate operations of sale and purchase. For active membership all settlers in the colony and companies or persons owning estates or plantations are eligible; for associate membership, all settlers or companies without such property. Active members alone will have the right to effect sales or purchases, through the intermediary of the Syndicate; these transactions are to be gratuitous and will not require any commission. The headquarters of the Syndicate will be at Hanoi and its affairs will be managed by a Committee of ten (elected by the active members) who will settle the dates of the annual meetings and arrange where they are to be held. The work of such a Syndicate, it will be seen, will be, if the initial rules are adhered to, confined far more to internal trading than the opening of foreign markets for local produce or influencing the local and home Governments with a view to beneficial legislation—such as our Ceylon P. A. aims at.

THE DEAR ELEPHANTS.—The teak trade in Siam is hampered by the increasing dearness of the elephants which drag the logs from the forests. Five years ago, elephants cost only 1,000 to 1,500 rupees each. At present, the price is from 3,500 to 4,000 rupees. The cost of labour, too, has risen over 50 per cent.—*Straits Times*, June 15.

THE DUTY ON TEA IN FRANCE—which is now about 11½d per lb. (or 208 francs per 100 kilos)—will after September 1st be a fraction over 1s 6d per lb. (400 francs per 100 kilos), unless the remonstrances now being offered to the French fiscal authorities, prevent this backward step. Little Belgium has actually no duty on tea.

CEYLON PUBLICATIONS IN PARIS.—The editor of the *Revue des Cultures Coloniale* has given several favourable notices of works that have issued from the *Observer* Press and that bear on agricultural topics, showing how keenly they are alive to what may help French colonists abroad. He especially notes the *Ceylon Handbook and Directory* and refers to "two portions of extreme "interest, namely that on the Meteorology "of Ceylon and the general sketch of the "Agriculture of Ceylon, covering nearly 200 "pages."

GEMMING IN CEYLON.—From the Administration Report for 1899, Mr. L. W. Booth, Government Agent, of the Province of Sabaragamuwa, we make two extracts :—

GEMMING.—It may be said that plumbago drove gems out of the market last year. Gemming, never a paying industry, is much less so now, as most of the accessible localities likely to contain gems have been searched. It will however continue to exercise its fascination, for if the blanks are many, the few prizes are dazzling. There was a general impression that if European and scientific methods were substituted for the primitive and crude ones now obtaining, the industry could be made a remunerative one. But the death-blow to that impression was dealt by the failure during the year of the European syndicate who laid out a large sum on plant and employed highly-paid experts. Their failure was due to the bad choice of a site and the expensiveness of their establishment. A better fate might have attended search in river beds conducted on scientific but less extravagant methods. The beds of rivers are supposed to be rich in gems, and they have not been explored to the same extent as valleys, owing to the greater difficulties which attend search in them and obtaining of licenses and the unsuitability of the Sinhalese methods for places where the water is deep. Gemming in navigable streams is not allowed for obvious reasons. Gemming in streams that are not navigable is not, as a rule, allowed, as the people living in villages through which the streams flow are dependent on them for their water supply both for drinking and irrigating purposes. Licenses are however issued to gem in parts of streams where it is shown that no inconvenience to the public will result by gemming. The lease of the right to gem in a section of the Niri-ella stream was sold from 1898 to 1899 for R760, and as the digging was very successful the lease for 1899 to 1901 fetched R2,020. The only innovation as yet adopted in river gemming is the use of the diving machine. One similar to that used by the Austrian Navy was recently worked by an Austrian, with, it is believed, good results.

CAMPHOR.

Of all exotics that are used for ornamental purposes, none has taken so kindly to New South Wales as the Camphor tree. On hard stiff clays, and in barren sand, and even in paved yards, this beautiful evergreen can be found flourishing most luxuriantly. Nothing appears to attack its foliage or wood, and if a tree gets too big for its surroundings and is ruthlessly pruned, not many months elapse before it sprouts again, and becomes a mass of delicate and fragrant verdure. Until quite recently the demand for the well-known resin of this tree was not extraordinary, being confined to the requirements of the druggist; but of late years it has been used in continually increasing quantities in the conversion of collodion cotton with the material known as celluloid, which is applied to the manufacture of imitation ivory, tortoise shel', horn, and a great variety of ingenious deceptions. It is easy to understand that anything that can be utilised in the substitution of artificial for fast disappearing natural production has a great future, and since the tree grows like a weed in so many parts of this Colony, it is worth while considering whether local manufacture of camphor could not be successfully attempted here.

The following details concerning the tree, and its products are taken from a special report written in 1897 by Mr. Lyster H. Dewey, of the United States Division of Botany, and reprinted in Kew Bulletin:—

Native Range.

The camphor tree is native in the coast countries of Eastern Asia from Cochin China nearly to the mouth of the Yang-tse-kiang, and on the adjacent islands from the southern part of the Japanese Empire, including Formosa and the Loochoo Islands, to Hainan, off the coast of Cochin China. Its range also extends into the interior of China as far as the province of Hupeh, about 500 miles from the coast on the Yang-tse-kiang, in latitude 30° north. This area, extending from 10° to 34° north latitude and from 105° to 130° east longitude, is all embraced in the eastern monsoon region, which is remarkable for abundant rains in summer.

The Camphor trees growing wild in the native range are usually most abundant on hillsides and in mountain valleys where there is good atmospheric as well as soil drainage. The temperature in the greater part of this region, which is partly within the tropics and partly subtropical, rarely falls below freezing. The tree is an evergreen, changing its leaves generally in April, and therefore the winter temperature is a factor of more importance than would be the case with a deciduous tree.

Description.

The camphor tree is an evergreen, related to the bay and to the sassafras of the United States. In its native habitat it attains a height of 60 to 100 feet, with wide-spreading branches and a trunk 20 to 40 inches in diameter. The leaves are broadly lanceolate in form, acuminate at both base and apex, of a light green colour, smooth and shining above and whitish or glaucous on the under surface. The lower pair of lateral veins are more prominent than the others, but the leaves are not as distinctly three-nerved as those of the cinnamon and many other species of the genus. The small white or greenish-white flowers are borne in axillary racemes from February to April on shoots of the previous season, and are followed in October by berry-like, one-seeded fruits about three-eighths of an inch in diameter. The fruiting pedicles terminate in a saucer-shaped disc, perishing after the mature fruit has fallen.

Range under Cultivation.

Notwithstanding the comparatively narrow limits of its natural environment, the camphor tree grows well in cultivation under widely different conditions. It has become abundantly naturalised in Madagascar. It flourishes at Buenos Ayres. It thrives in Egypt, in the Canary Islands, in south-eastern France, and in the San Joaquin Valley in California, where the summers are hot and dry. Large trees, at least 200 years old, are growing in the temple courts at Tokyo, where they are subject to a winter of seventy to eighty nights of frost, with an occasional minimum temperature as low as 12° to 16° F. The most northern localities in the United States, where the camphor tree has been grown successfully out of doors, are Charleston and Summerville, in South Carolina, Augusta, Ga , and Oakland, Cal.

At Charleston Sommerville, and Augusta the trees have withstood a minimum temperature of 15° F., but they have been protected by surrounding trees and buildings. At Mobile, Ala., the trees have grown and fruited in protected situations, while in exposed places they have been repeatedly destroyed by frosts. While the camphor tree will grow on almost any soil that is not too wet, it does best on a well-trained sandy or loamy soil, and it responds remarkably well to the application of fertilizers. Its growth is comparatively slow on sterile soils, but under favourable conditions it sometimes grows very rapidly. An instance is recorded of a camphor tree in Italy a foot in diameter and 90 feet high, eight years from the seed. Under ordinary conditions, however, such a girth is not often attained in less than twenty-five years, and such a height is rarely attained in a century. Under favourable conditions an average of 30 feet in height, with trunks 6 to 8 inches in diameter at the base, may be expected in trees ten years from the seed

Uses of the Tree and its Products.

The principal commercial uses of the camphor trees are for the production of camphor and camphor oil. Camphor is employed extensively in medicine. It enters into the composition of many kinds of liniments for external application. For liniment it is used especially in combination with olive oil. It is taken internally for hysteria, nervousness, nervous headaches, diarrhœa, and diseases affecting the alimentary canal. It is a specific in cases of typhoid fever and cholera. Camphor fumes have been used with success in cases of asthma. It has been used very extensively to keep insects out of furs, woollens, etc. In Japan, camphor and camphor-oil are used in lacquer work. The oil is somewhat similar to turpentine, and could doubtless be used to advantage in varnishes and shellacs. It is now used in the manufacture of toilet soaps. In Japan and China it has been used for illuminating purposes, but it produces a smoky flame.

Among the secondary uses of the camphor tree the most important is for ornamental planting. Its bright evergreen leaves, rapid growth, and long life make it valuable for this purpose. In Japan and China it has been the principal tree planted in the temple courts for many centuries, and in those countries, it takes the place of the historic oaks of England. It has been extensively introduced into Southern Europe and South America for ornamental purposes.

The wood, with its close grain, yellow colour, and susceptibility to polish, taking a kind of satin-like finish, is exceedingly valuable in cabinet-work, especially for making drawers, chests, and cupboards proof against insects. The leaves and young branches, although they have but a slight odour of camphor, are packed with clothing or scattered about unused rooms to guard against insects.

The tree produces an abundance of berry-like fruits, which are used in Japan and China to make a kind of tallow. The fruits are greedily eaten by chickens and birds.

Conditions of Successful Cultivation.

For most of the secondary purposes, the camphor tree may well be cultivated wherever it can be made to live; but for commercial distillation, and for the production of wood for cabinet purposes, it must be grown under the most favourable conditions. The minimum winter temperature should not be below 20° F., and this minimum should be of rare occur-

rence. The soil, preferably sandy and well drained, should be irrigated unless there are abundant rains. Fifty inches of water during the warm growing season is desirable, and much more may well be used where the air is very dry.

An abundance of plant-food, rich in nitrogen, is required for rapid growth, but the kind of fertilizer that can be most profitably applied will vary according to the character of the soil in each locality. In the absence of definite information in this regard the kind of fertilizer producing most rapid growth of wood in the orange or in other fruit trees may be taken as an index,

Propagation.

Camphor tree s may be grown either from seed or from cuttings. They are usually grown from seed, as the trees fruit abundantly, and seedlings can be grown more easily than cuttings. The seeds are collected at maturity in October and November, and after drying are packed in sharp white sand or some similar material to keep them fresh until the time of planting in spring. About the last of March they are shown in drills in the seed bed.

The soil of the seed bed should be a good sandy loam mixed with about one-third leaf mould. The seed bed should be kept moist, but not too wet, and should be shaded from the direct rays of the sun if the weather is warm. The best soil temperature for germinating camphor seeds is from 70° to 75° F. The temperature of the atmosphere may be ten degrees higher. The seedlings will grow well at higher temperatures, but are likely to lack vigour and hardiness.

The seedlings may be grown in pots, which will facilitate transplanting at any time, or they may be transplanted in nursery rows early in April when one year old. Plants two years old are generally regarded as best for final planting. At this age they vary from 20 to 40 inches in height.

Planting and Cultivation.

In Japan, where the law requires that a new tree shall be set out for every one cut, they are not generally set in strait orchard rows, but cultivation there is performed almost exclusively by hand labour. There are no records showing results or regular orchard planting, hence the distances at which trees should be planted must be determined by the size and form of the trees and the methods of cultivation and of procuring the gum. They may be set closely in rows about 10 feet apart, and alternate rows cut and reset every five years, thus producing bush-like plants of ten years' growth. They may be planted in checks 10 feet square, and alternate trees cut every ten or twelve years, or they may be planted in larger checks, and all of the trees be cut at the age of fifteen or twenty years.

There are not sufficient data obtainable upon which to base definite statements as to the best methods of planting, or the age at which the trees may be cut with greatest profit. A recent English consular report from Japan states that, "although hitherto the youngest wood from which camphor was extracted was about seventy to eighty years old, it is expected that under the present scientific management the trees will give equally good results after twenty-five or thirty years." Camphor of good quality has been produced in Florida from the leaves and twigs of trees less than twenty years old, 1 lb. of crude camphor being obtained from 77 lb. of leaves and twigs.

The trees will endure severe pruning with little apparent injury. One-third of the leaves and young shoots may be removed at one time without materially checking the growth of the tree. The largest proportion of camphor is contained in the older, larger roots; the trunk, limbs, twigs, and leaves containing successively a decreasing proportion. When the camphor tree is killed nearly to the ground by frost it sends up vigorous shoots from the base. It may be expected to do the same when cut, especially if cut late in the fall. Experiments are needed to determine whether this growth may be depended upon or whether it will be more profitable to dig out the larger roots and set out new seedlings.

Distillation.

In the native forests in Formosa, Fukien, and Japan, camphor is distilled almost exclusively from the wood of the trunks, roots, and larger branches. The work is performed by hand labour, and the methods employed seem rather crude. Different methods of distillation are employed in different districts, but those in use in the province of Tosa, in Japan, appear to be the most skilful. The camphor trees are felled, and the trunk, larger limbs, and sometimes the roots, are cut into chips by hand labour with a sharp concave adze.

The fresh chips are placed in a wooden tub about 40 inches high and 20 inches in diameter at the base, tapering toward the top like an old-fashioned churn The perforated bottom of the tub fits tightly over an iron pan of water on furnace of masonry. The tub has a tight-fitting cover, which may be removed to put in the chips. It is surrounded by a layer of earth about 6 inches thick to aid in retaining a uniform temperature. A bamboo tube extends from near the top of the tub into the condenser. This consists of two wooden tubs of different sizes, the larger one right side up, kept about two-thirds full of water from a continuous stream which runs out of a hole in one side. The smaller one is inverted with its edges below the water, forming an air-tight chamber. This air chamber is kept cool by the water falling on the top and running down over the sides. The upper part of the air chamber is sometimes filled with clean rice straw, on which the camphor crystallizes, while the oil drips down and collects on the surface of the water. In some cases the camphor and oil are allowed to collect together on the surface of the water and are afterward separated by filtration through rice straw or by pressure.

About 12 hours are required for distilling a tubful by this method. Then the chips are removed and dried for use in the furnace, and a new charge is put in. At the same time the camphor and oil are removed from the condenser. By this method 20 to 40 lb. of chips are required for 1 lb. of crude camphor.

The principles generally held to be essential in distilling camphor of good quality are:—(1) The heat must be uniform and not too great, producing a steady supply of steam; (2) the steam after liberating the camphor must not come in contact with metal, that is, the tub and condensing apparatus must be of wood.

Suggested Improvements.

Many improvements upon the methods described can doubtless be made, tending both to a reduction in cost and an increase in the proportion of crude material obtained. Instead of an adze wielded by hand labour a machine similar to the "hog" used for grinding up waste slabs in sawmills may be used to reduce camphor limbs to the requisite fineness for distillation. Better distilling apparatus can probably be devised. Thermometers may be introduced to determine the heat in the distilling tub, and the furnace may be so arranged as to permit better control and greater economy in fuel. Camphor and camphor-oil are both slightly soluble in water, and the condensing chamber should be improved so as to recover the product that is being constantly carried off in the running stream which cools the chamber

Outlook for Future Market.

The consumption of camphor in the United States, as measured by the importations, has been decreasing during the past ten years, while the price has been increasing.

The Tariff Act, approved July 27, 1897, imposes a duty of 6 cents per pound on refined camphor, and leaves crude camphor on the free list, as heretofore.

There has been an increase in importations of refined camphor, due to improved methods of refin-

ing and packing in Japan and to changes in the tariff, but this increase has been much more than counterbalanced by the decrease in importation of crude camphor. The decrease may be attributed to the following causes:—(1) the exhaustion of the supply of the available camphor trees near the shipping ports; (2) the governmental restrictions on the trade in camphor in Formosa; (3) government taxes on the exportation of camphor from Formosa; (4) hostilities and wanton destruction of camphor stills by the natives in Formosa; (5) disturbances in the camphor-producing district of China; (6) the China-Japan war; (7) attempts by speculators to corner the market.

These causes have increased the price of camphor, and this in turn has led to the introduction of substitutes. Menthol and other peppermint derivatives or compounds, carbolic acid and its derivatives, naphthalin, formalin, and insect-powder are now used for various purposes where camphor was formerly employed. Camphor has been manufactured artificially, at a cost leaving a margin of profit at present prices. It is therefore apparent that if the production of camphor from the trees is to be carried on with profit in this country, and the industry increased to any considerable extent, the price of camphor must be reduced to compete with the prices of substitutes now taking its place.

Camphor has been obtained from several other plants not at all related to the ordinary camphor tree, but only two kinds. Borneo camphor and Blumea camphor, are of any importance commercially.

Borneo camphor is obtained from the camphor tree of Borneo and Sumatra, *Drybalanops aromatica*. It is deposited in clefts and hollows in tho wood, and has simply to be taken out. This camphor is comparatively rare, and the supply is consumed almost exclusively in China, where it is valued at from thirty to ninety times as much as ordinary camphor.

Blumea camphor is obtained by distillation from *Blumea balsamifera*, a shrub growing in Burma and the Malay Peninsula. This is usually refined in Canton, whence about 10,000 lb. are exported annually. The source of this supply is abundant, and as the industry develops it is likely to enter more into competition with ordinary camphor. Neither of these plants can be grown in the United States, except possibly in Southern Florida. without protection against cold.—*Agricultural Gazette, N. S. Wales.*

PLANTING IN GERMAN EAST AFRICA.

In the December issue of *Der Tropenpflanzer*, Berlin, are the following interesting accounts of G. E. A.:—

The Coffee plantation Sakarre (Usambara). The annual report of the financial year 1898-99 shows that the plantation situated in west Usambara suffered less from the drought of the preceding year than the coffee plantations situated in the eastern slopes of the Handai mountains. In the summer of 1898, *i. e.* at the beginning of the financial year, the plantation numbered 300,000 trees and in the course of the year *i. e.* until the end of July, 220,000 more were planted, so that the entire plantation consists of 520,000 trees, which gives the plantation in respect of size the third place among the coffee plantations of Usambara (coming next to Magrotto and (Union). A dwelling-house, an office and two stables have been erected in place of the temporary buildings. Besides the plantation roads, preparatory works on the high road which is to connect Sakarre with the future railway station Korogwe have also been completed. On this road, near the river Garia, the storehouses are to be built. The number of labourers varied between 300 and 400, for the greater Wanyamwesi. The village Sakarre has become an important market place, to which even the inhabitants of distant villages send their produce. The origiual capital of 700,000 marks has been raised to 1,200,000 marks in an extraordinary sitting on the 16th of May, and the new shares have been nearly all taken up by the former shareholders. The accounts show that the cost of each tree up to now, including buildings, management, etc., is about one mark.

This plantation is therefore one of the most cheaply managed in Usambara.

What account a plantation costs in German East Africa.—In the "German East African Zeitung" of October 7th is to be found the following rough estimate of a plantation of 10,000 palms made by an expert:—

Purchase of young palms, R. 40-50 per 1000	R.	400-501
Carrying them to their respective places	,,	100-150
Planting 10,000 palms, 4 labonrers 50 days @ R. ½	,,	100-125
Total	R.	600-675 (*sic*)

Generally speaking the cost of one palm until the time of bearing may be estimated at R1½. There may however be favourable conditions under which a coconut plantation does not incur further expense than the cost of buying the land or paying the rent. This is the case when there is a concession to settle down on the plantation a number of families for the space of six years. They receive the right to plant muhogo and bananas in retrrn for a third of the produce and the obligation to look after a certain number of palms. The muhogo at the same time serves for shading the young trees. This third part of the produce of the soil should cover the purchase of the seedlingsand young palms. The *Tropenpflanzer* also has the following abont the fibre plantation at Kurasini, Dares-Salaam:—The original plantations consisting of 150 hektars, were bonght later on. At first only abont 30 labourers were employed as it was an experiment. Work was begun on April 25th, 1895. The first 45 nnrseries were laid ont in Jnne 1895 and in the beginning of 1896 the first plants were put out. Up to spring 1897, 27 hektar had been planted; on the 26th March 1898 150 hektars were covered. The species cnltivated is the Manritins hemp (Furcroya gigantea) the fibre of which is of less valne than sisal hemp, but the plant is more easily grown.

The plants were set 9 by 9 ft. apart which gives 111 plants to 1 hektar.

The machine for cleaning has been at work since December 12th, 1898. It gives about 140 lbs. per day. In Augnst the first 45 bales, of 250 lb,, were shipped. A light railway has been constrncted, 1½ km. of which are already in use. There are actually 60,000 plants ripe for harvest. It is estimated that from the time of planting plants are ready for harvest in about 3 years time. Each leaf weighs about 2 kgr. At the first cutting each plant had about 70-80 leaves; 1,000 leaves give on an average 40 lb. dry fibre so that one hektar produces about 1,000-1,250 kar. (1-tons; the fibre was 1-1½ m. long and had a nice whit appearance.

A ton of fibre fetched during the last year 400-500 marks in Hamburg. If the whole plantation were laid out at the same time 240 hektars wonld in three years produce 300 tons of fibre, worth 120,000 marks.

Compared to other products the cultivation of fibre is very simple and cheap. As long as the price does not fall from overproduction my opinion is that the cultivation of fibre is very profitable.

AN INCH OF RAIN.

What does an inch of rain mean? Few person have a definite idea as to what is involved in the term. It may aid those whose opinion on the matter is not as fixed and positive as it might be to follow this calculation: An acre is equal to 6,272,640 square inches. An inch deep of water on this acre will be as many cubic inches of water, which at 231 to the gallon is 27,154 gallons. This immense quantity of water will weigh 228,190 lb. or 114 tons. One-hundredth of an inch (·01) alone is equal to over one ton of water to the acre.—*Queensland Agricultural Journal.*

PRODUCTION OF IPECACUANHA.

One of the most widely used of all vegetable drugs is the powerful emetic ipecacuanha, which is obtained from a Brazilian shrub. The French Consellier de Commerce, at Cuyaba, in the State of Matto Grosso, Brazil, gives in a recent report an interesting account of this plant, which has in that State and the neighbouring districts its only habitat. The drug is obtained from plants which attain a heigbt of from 12 to 16 inches. The leaves are oval, dark green, and sharply ribbed, and the white flowers give place to an ovoid fruit containing black seeds. Besides the *Ipecacuanha Cephoelis*, or the "white ipecacuanha," as it is generally known, there are several other varieties which are somewhat different, but all are used for the same purpose, and are distinguished as brown, black, and striated ipecacuanha. The drug is obtained from the root of the plant, where it occurs in quantities about the size of a quill, between the layers. The taste is acrid and bitter, and the odour is nauseating. That found next to the bark is most active in its effects, having in the highest degree the emetic property, due to the active principle known as 'Emetine." The state of Matto Grosso which as before observed, is the habitat of the plant, is one of the richest in Brazil, among its many natural products being gold and diamonds, rubber, sarsaparilla, jalap, jaborandi, copaiba, various gums and drugs of several kinds. Ipecacuanha is found in the north and north-west of the San Luiz-de-Caceres, formerly in the Villa Maria region, and its habitat covers an immense area comprised between a network of rivers in Brazil, Bolivia, and Paraguay. The dense of foliage of the forests of this region provide the dank and humid conditions which favour the growth of the shrub. The Brazilian product is known as Rio Ipecacuanha, and the product secured from similar shrubs in other countries passes under the name of the port from which it is shipped. Attempts have been made to transplant the shrub and to cultivate it in British colonies in various parts of the world, but without success, and Brazil continues to be the only source of supply for the best grade. The process of gathering the plant is perfectly simple, and during the rainy season, while the ground is soft, is very easy. A stick is inserted under the root, and while this is raised with one hand the entire plant is pulled out with the other. As little care is given to the protection of enough plants to secure a future supply, the output is growing smaller and the price consequently higher each year. The scarcity of workmen is a great difficulty. In the dry season the roots cannot be gathered, and it is at this season when any one adapted to the work is engaged in gathering rubber. During the rainy season, from October to April, when the plants may be easily drawn from the ground, women are usually employed for the work.—*Journal of the Society of Arts.*

WEEDS ON PATHS.

These may be destroyed without breaking up the paths by treating with hot brine—1 lb. salt to 1 gallon water; or 1 part sulphuric acid to 30 parts water; or 1 oz. carbolic acid to 1 gallon water; or 1 lb. powdered arsenic in 10 gallons water. To dissolve the arsenic, place it in 3 gallons cold water, bring up to boil and keep stirring, then while boiling add 7 gallons water and 2 lb. washing soda.—*Queensland Agricultural Journal.*

GOOD MANURES.

For Potatoes.—3 cwt. superphosphate, 2 cwt. kainit, and 1 cwt. sulpbate of ammonia. Mix before planting.

For Cabbages and Cauliflowers.—3 cwt. bonedust, 1 cwt. sulphate of potash per acre, followed by a top dressing, after the plants have recovered from transplanting and commenced to grow, of 1½ cwt. of sulphate of ammonia, mixed with soil and sprinkled round the plants.—*Queensland Agricultural Journal.*

COFFEE SHADE TREES.

[SPECIALLY TRANSLATED FOR "INDIAN GARDENING."]

M. PIERRE, late Director of the Jardin d'essai of Saigon, in reply to a request of the Editor of the *Revue des Cultures Coloniales*, treats in the January number of that Journal, of the Kapok tree utilised in Java as a shade tree for coffee. He states that there are two trees known in Malaya as the "Kapok cetan" and the "Kapok." *Kapok cetan.*—Bombax ceiba L.; Bombax malabaricum D. C., Salmalia malabarica Sch. et. Endl. This is a tree of 60 to 90 feet, which attains a considerable diameter, 18 to 36 inches. It secretes a gum known in India under the name of *Muchi*. With age the trunk becomes hollow. Its wood is white with loose fibres, not durable, very light, and has but small value relatively to its employment in the manufacture of buoys, boxes and toys. The endocarp of its fruit is covered inside with a silky gloss of short fibres of which the only use is to stuff certain articles of furniture, cushions, pillows, mattresses, etc. Perhaps it might be used in hat making. It is certain that no one has yet succeeded in spinning the fibre.

The fact that it loses its leaves in the dry season contests its utility as a protective tree in coffee plantations. However, it might be found of advantage when a rapid result is desired, because its branches have the property of striking root at all times in soil the least favourable.

Kapok.—Ceiba pentandra (L) Gaertn; Eriodendron anfractuosum, D. C. Bombax pentandrum L. This is the "silk-cotton tree" of the English and the "ouatier" of the French colonies. All the properties of the *Bombax ceiba* are those of the *Ceiba pentandra*, and in order to be complete it may be said that oil in small quantities may be extracted from the seeds of the two species."

It appears then (continues M. Pierre). that the only advantage of these trees in a coffee plantation is to take root quickly from cuttings; thus quick-set hedges in Indo-China and elsewhere are made rapidly, completely and very economically by setting the best developed branches particularly those of *Ceiba pentandra*. Their produce in wood, silk, resinous gum and the oil from their seeds, does not appear to me of sufficient importance to take into account.

To shade a coffee plantation with trees losing their foliage in the dry season seems to me of an utility little demonstrable, if it is remembered that it is positively in that season that the effects of reverberation make themselves felt.

That is a personal opinion which may be contested. Nevertheless, it is permitted to me to think that it would be more practical to make trial with other growths, even though their foliage should offer the same drawback with those of the Kapok; and in that way I make allusion to rubber plants such as Hevea, Manihot, etc.; necessarily many other useful plants might combine with the cultivation of coffee. Their number is considerable: first, at the commencement of a coffee plantation, bananas, above all the Musa textilis, would reduce in a large measure the expenses of planting, all in fulfilling the role of protection from or straining the sunlight, claimed for the Kapok. The Bread-fruit tree, the Jak, the Garcinias productive of gamboge, the Ochowa Gabonii, so rich in sebaceous matter and in the same order, the Pentadesma butyracea and leptonema, the Allanblackia Klainii, Sailenxii and Stuhlmanii, the Poga and Paud oleosa, the Ongokea Gore, the Vitellaria paradoxa (which is always wrongly called the Butyrospermum Parkii), etc.—*Indian Gardening.*

THE CABLE LAID FROM PARA up the Amazon was quickly destroyed by the driftwood of the mighty river, and a landline is now in course of construction. About 180 miles of it are completed, notwithstanding the expense and difficulty of cutting a way through the tropical forests.—*Globe*, June 1.

TEA IN JAPAN.

Mr. A. H. Lay, the British Assistant-Consul at Tokio, in his report on the trade of Japan, gives some interesting information in regard to tea industry in that country. The quantity of tea exported from Japan during 1899, he says, exceeded that shipped abroad during 1898; but all the same the tea business in Japan is becoming more and more unsatisfactory each year, and, for the foreign merchant at any rate, there is little or nothing to be made out of it. In quality the tea of 1899 compared unfavourably with the crop of 1898. The practice of picking the young leaves in the early spring before they are properly matured, for the sake of obtaining exorbitant prices for small quantities, is undoubtedly having a very injurious effect on the plants, and it is surprising that Japanese tea growers do not realise this fact. But it is not only from the effects of the injudicious system of picking that the Japanese tea industry is suffering. The trade with Canada, Mr. Lady points out, is appreciably affected by the competition of the Ceylon and India growers, who, by extensive advertising and other methods, are bringing their produce prominently before the public. The Japanese on the other hand, are making no efforts whatever to advance the sale of their teas, and as Ceylon green teas are now making their appearance in Canada, where their sale will be vigorously pushed, the future of Japanese tea in that market cannot be regarded as bright.—*Financial Times*, May 31.

CEYLON TEA COMPANY.

The Directors submit the Ninth Annual Report for the year ending 31st March, 1900

The considerable sum standing to debit of Profit and Loss Account, including also the amount irrecoverable owing to the failure of the New Oriental Bank Corporation, Limited, has now been reduced to R550·31 only, so that from next year a dividend is likely to become payable.

The position of the Company is sound, while the important work of pushing and advertising pure Ceylon Tea at the Tea Kiosk in Colombo and throughout the world has been maintained. The quality of the Tea supplied in the dry state and the excellence of the Tea in cup as served to Visitors at the Kiosk have been subject of favourable remark during the year.

As usual a memo of places to which Tea has been sent during 1899-1900 is appended. It includes:—

Australia, Austria, America, Burma, Belgium, Canada, China, Denmark, Egypt, France, Germany, India, Italy Madagascar, New Zealand, Nova Scotia, Norway, Syria, Sumatra, Straits Settlements, Great Britain and Ireland.

RAINFALL RETURN FOR COLOMBO.

Supplied by the Surveyor-General.)

	1895.	1896.	1897.	1898.	1899.	Av of 30yrs.	1900.
	Inch.	Inch	Inch	Inch	Inch.	Inch.	Inch.
January ..	5·00	2·92	3·81	2·32	6·98	3·22	3·72
February ..	0·81	0·35	1·68	1·98	2·78	1·93	0·63
March ..	1·84	5·64	3·66	4·21	0·88	4·78	3·71
April ..	9·34	5·93	10·97	22·81	6·66	11·31	15·12
May ..	10·09	9·31	8·30	5·80	17·73	12·09	10·63
June ..	13·99	8·37	10·14	10·94	9·23	8·37	7·83
July ..	0·52	2·85	5·24	6·15	1·11	4·38	0·01*
August ..	0·92	6·35	9·09	0·97	0·62	3·67	
September	4·09	10·99	4·58	6·90	1·43	5·01	
October ..	30·36	16·78	4·71	20·60	12 99	14·52	
November..	5·83	19.81	11·66	17·38	8·58	12·66	
December..	9·44	11·76	8·89	3·05	4·44	6·39	
Total..	92·23	101·06	82·73	103·11	73·48	88·33	41·65

* From 1st to 4th July 0·01 inch, that is up to 9·30 a.m. the 5th July.—ED. *T.A.*

Ceylon Rainfall.

THE P. W. D. METEOROLOGICAL OBSERVATIONS FOR MAY 1900.—We append the Monthly Return of rain from which it will be seen that the highest fall in May, was at Kalutara in the Western Province, 13·60 inches and the lowest at Lahugala in the Eastern Province, 0·20 inches.

WESTERN PROVINCE

Negombo, Mr. Bucknall (6) ... 4 13
Kalutara Mr. Gregson (36) .. 13·60
Labugama, Mr. Bond (369) ... 10·76
Henaratgoda, Mr. Silva (33) .. 5·83

CENTRAL PROVINCE.

Katugastota, Mr. Morgan (1,500) ... 2 90
New Valley, (Dikoya) Mr. Ward (3,700) .. 5·00
He'boda (Pussellawa) Mr. Anderson (3,300) .. 7·09
Yarrow Estate, .. Mr. Pedwick (3,400) 4·11
Peradeniya Mr. ... MacMillan (1,540) ... 2·91
Duckwari, Mr. Edwin (3,300) ... 3·20
Caledonia, Mr. Goork (4,273) .. 3·70
Pussellawa, Mr. ... Powell (3,000) .. 5·38
Hakgala, Mr. .. Nock (5,581) .. 5·93
S. Wanarajah Estate, Mr. Tatham (3,700) .. 3·59
Padupola, Mr. Ward .. (1,636) ... 10·12
Mylapitiya, Mr. Fletcher (1,707) ... 1·15

NORTHERN PROVINCE.

Mullaittivu, Mr. Sanmukam (12) .. 1·83
Jaffna Mr. Macdonnel (8) 0·76
Mankulam, (N. Road) Mr. Walker (167) ... 0·87
Elephant Pass, Mr .. Silva (7) – 0·26
Vangalachettykulam, Mr. Oorloff (179) .. 1·10
Point Pedro, Mr. Chitambalam (24) ... 0·40
Jaffna College, Mr. Cooke (9) ... 1·34
Kayts, Mr. Kretser .. (8) .. 1·93
Kankesanturai, Mr. .. Pararachasingha (10).. Nil
Pallai, Mr. Silva (24) .. 3·40
Murikandy, (North-Central Road) Mr. Silva (7) 2·40
Nedunkeni, Mr. Sanmukam (122) ... 3·53
Chavakachcheri, Mr. Silva (16) ... 0·22
Udupiddi, Mr. Brown (35) .. 1·09
Marichchukaddi, Mr. T. Pillay (14) 0·85
Murungan, Mr. Ramalinkam (52) 0·29
Vavuniya Mr. Walker (318) 2·92

SOUTHERN PROVINCE.

Ella Vella Mr. Caldicott (262) 2·54
Kekanadura, do (150) 4·12
Denagama, do (286) 3·14
Udukiriwila Mr. Lourensz (235) .. 1·45
Kirama, Not received (260) —
Hali-ela Mr. Caldicott (200) 2·35
Tissa Mr. Silva (75) .. 2·17
Matara Mr. Caldicott (15) 3·34
Dandeniya, do (175) 2·45
Urubokka, Mr. Caldicott (890) 0·44
Tangalla Mr. Fox (94) 0·87
Mamadola, Mr. Doole (56) .. 1·42

EASTERN PROVINCE.

Irrakkamam, Mr. Bower (42) ... 3·36
Devilana, Mr. Vanderstraaten (136) 3·87
Sagamata, Mr. Bower (40) ... 0·73
Ambare, do (65) 4·41
Kanthalai, Mr. Carte (150) 0·33
Allai, Mr. Carte (95) 1·76
Rukam, Mr. Vanderstraaten (120) ... 3·50
Periyakulam, Mr. Carte (20) ... 0·37
Chadaiyantalawa, Mr. Edge (57) 1·34
Kalmunai, do (12) 3·79
Rotewewa, do (30) 0·72
Lahugala, do (70) 0·20
Naulla, do (30) 0·80
Andankulam, Mr. Carte (41) ... 0·38
Manalpaddy, Mr. Vanderstraaten (21) 1·50
Maha-Oya-Tank, Mr. Vanderstraaten (190) 4·20
Potuvil, Mr. Brown — 0·33

N.-W. PROVINCE.

Magalawewa, Mr. Gunaratna (176) .. 3·68
Maha Uswewa tank, Mr. Addams (160) ... 2·80
Tenepitiya, Mr. Churchill (8) ... 2·70
Batalagoda, Mr. Madahapola — 4·45

N.-C. PROVINCE.

Kalawewa, Mr. Emerson (268) 1·75
Maradankadawala, Mr. Emerson (443) ... 3·70
Mihintale, Mr. MacBride (354) .. 0·37
Horowapotana, Mr. MacBride (217) .. 1·50
Madawachchiya, Mr. MacBride (285) .. 2·90
Topare, Mr. Jayewardane (200) .. 10·84
Minneriya Mr. Eves — 6·02

UVA PROVINCE.

Bandarawela, Mr. Tocke (4,000) .. 3·58
Haldummulla, Mr. Viramuttu (3,160) .. 10·90
Kumbukan, Mr. Rowland (446) ... 2·30
Koslanda, Mr. Rowland (2,258) ... 7·86
Tanamalwila, Not received (550) .. —
Bibile, Mr. Silva (680) 2·9
Taldena, Mr. Fernando (1,100) .. 1·87
Allutnuwara—Mr. Leembruggen (300) 3·18

SABARAGAMUWA.

Ambanpitiya, Mr. Dassanayaka (729) 4·37
Pelmadulla, Mr. Robertson (480) 8·53
Kolonna Korale (Hulanda-oya) Mr. Dabre (203) Nil
Avisawella, Mr. Clarke (105) 9·18

SHARE LIST.

ISSUED BY THE

COLOMBO SHARE BROKERS' ASSOCIATION.

CEYLON PRODUCE COMPANIES.

Company	paid p. sh.	Buyers.	Sellers.	Transactions
Agra Ouvah Estates Co., Ltd.	500	—	900	—
Ceylon Tea and Coconut Estates	500	-	500 n'l	—
Castlereagh Tea Co., Ltd.	100	—	90	95
Ceylon Hills Estates Co. Ltd.,	100	—	—	—
Ceylon Provincial Estates Co. Ltd.	500	—	500	—
Claremont Estates Co., Ltd.	100	—	—	—
Clunes Tea Co., Ltd.	100	—	—	—
Clyde Estates Co., Ltd.	100	40	—	—
Doomoo Tea Co., Ltd.	100	60	65	—
Drayton Estate Co., Ltd.	100	—	—	—
Eila Tea Co., of Ceylon, Ltd.	100	..	60	—
Estates Co., of Uva, Ltd.	500	225	—	—
Gangawatta	500	—	—	—
Glasgow Estate Co., Ltd.	500	—	950	—
Great Western Tea Co.,	500	640	—	—
Hapugahalande Tea Estate Co.	200	200	—	—
High Forests Estates Co., Ltd	500	512·50	525	—
Do part paid	350	—	400	—
Horekelly Estates Co., Ltd..	100	—	..	—
Kalutara Co., Ltd.	500	—	350	—
Kandyan Hills Co., Ltd.	100	—	67·50	—
Kanapediwatte Ltd.	100	—	90	--
Kelani Tea Garden Co., Ltd.	100	40	—	—
Kirklees Estates Co., Ltd.	100	—	120	—
Knavesmire Estates Co., Ltd.	100	—	65	—
Maha Uva Estates Co., Ltd	500	—	425	—
Mocha Tea Co., of Ceylon, Ltd.	600	600	—	—
Nahavilla Estate Co., Ltd.	500	—	450	—
Neboda Tea., Co. Ltd	500	—	500	—
Nyassaland Coffee Co. Ltd	100	—	—	—
Ottery Estate Co., Ltd.	100	—	—	—
Palmerston Tea Co., Ltd.	500	-	400	—
Penrhos Estates Co., Ltd.	100	92½	95	—
Pine Hill Estate Co., Ltd.	60	—	42½	—
Pitakanda Tea Company	500	—	—	—
Putupaula Tea Co., Ltd.	100	--	—	—
Ratwatte Cocoa Co., Ltd.	500	—	—	—
Rayigam Tea Co. Ltd.	100	50	55	—
Roeberry Tea Co., Ltd.	100	—		—
Ruanwella Tea Co., Ltd.	100	—	—	—
St. Heliers Tea Co., Ltd.	500	510	—	—
Talgaswela Tea Co., Ltd.	100	—	—	—
Do 7 per cent. Prefs.	100	—	..	—
Tonacombe Estate Co., Ltd.	500	—	450	—
Udabage Estate Co., Ltd.	100	—	..	—
Udugama Tea & Timber Co., Ltd.	50	—	..	—
Union Estate Co., Ltd.	500	..	...	—
Upper Maskeliya Estate Co. Ltd.	500	—	470	...
Uvakellie Tea Co., of Ceylon, Ltd.	100		—	..
Vogan Tea Co., Ltd.	100	...	80	..
Wanarajah Tea Co.,Ltd.	500	..	..	..
Yataderiya Tea Co., Ltd.	100	..	375	..

CEYLON COMMERCIAL COMPANIES.

Company	paid p. sh.	Buyers.	Sellers.	Transactions
Adam's Peak Hotel Co., Ltd.	100	..	..	..
Bristol Hotel Co., Ltd.	100	95	...	..
Do 7 per cent Debts.	100	107·50	...	..
Ceylon Gen. Steam Navgtn. Co., Ltd.	100	215	...	..
Colombo Apothecaries' Co. Ltd.	100	145	...	..
Colombo Assembly Rooms Co., Ltd.	20	12·50	..	...
Do prefs.	20	...	..	..
Colombo Fort Land and Building Co., Ltd.	100	85	...	85
Colombo Hotels Company	100	..	300	...
Galle Face Hotel Co., Ltd.	100	145	..	...
Kandy Hotels Co., Ltd.	100	..	120	120
Kandy Stations Hotels Co.	100	..	30	...
Mount Lavinia Hotels Co., Ltd.	500	150	..	...
New Colombo Ice Co., Ltd.	100	..	..	175
Nuwara Eliya Hotels Co., Ltd.	100	...	30	...
Do 7 per cent prefs.	100	..	..	..
Public Hall Co., Ltd.	20	15	...	..
Petroleum Storage Co.	100	..	..	..
Do 10 % prefs.	100	...	...	..

LONDON COMPANIES *

Company	paid p. sh.	Buyers.	Sellers.	Transactions
Alliance Tea Co., of Ceylon,	10	8½	9½—10	..
Anglo Ceylon General Estates Co.	100	..	35—45	..
Associated Estates Co., of Ceylon	10	..	3—4	...
Do. 6 per cent prefs.	10	..	6½—7½	..
Ceylon Proprietary Co.	1	...	⅝—⅞	..
Ceylon Tea Plantation Co., Ltd.	10	..	26—27	..
Dimbula Valley Co., Ltd.	5	..	5½—6	..
Do prefs.	5	..	..	...
Eastern Produce & Estates Co.	5	...	5½—5¾	...
Ederapolla Tea Co.,	10	...	8	...
Imperial Tea Estates Co., Ltd.	10	...	..	
Kelani Valley Tea Asscn., Ltd.	5	..	5—6	...
Kintyre Estates Co., Ltd.	10	...	7—8	..
Lanka Plantation Co., Ltd.	10	4½	4—5	..
Nahalma Estates Co.,Ltd.	1	..	¼—¾	..
New Dimbula Co., Ltd.	1	...	2¾—3	..
Nuwara Eliya Tea Estate Co., Ld.	10	..	...	10¼
Ouvah Coffee Co., Ltd.	10	..	5—7	..
Ragalla Tea Estates Co., Ltd.	10	..	10	..
Scottish Ceylon Tea Co.,Ltd.	10		13—15	...
Spring Valley Tea Co., Ltd.	10	3	4—5	..
Standard Tea Co., Ltd.	6	..	11—12	..
The Shell Transport and Trading Company, Ltd.	100	..	.	302
Yatiyantota Ceylon Tea Co., Ltd.	10	...	8—9	...
Do. pref. 6 o/o	10	...	9¾—10¼	..

BY ORDER OF THE COMMITTEE.

Colombo, July 6th, 1900.

* Latest London Prices.

THE LOCAL MARKET.

Colombo, July 6th, 1900.

COFFEE :—	
Estate Parchment per bushel	None offering.
Chetty do do	None offering.
Native Coffee per cwt.	None offering.
do F. O. B per cwt.	None offering.
Liberian coffee:—per bushel	None offering.
do cleaned coffee:—per cwt	None offering.
Cocoa unpicked:—per cwt	None offering.
do cleaned do	None offering.
Cardamoms Malabar per lb	R0·90 to 1·25
do Mysore do	R1·25 to 1·50
RICE :—	
Soolai per bag of 164 lb. nett	R9·40 to 9·50
Slate or 1st quality:—per bushel	R3·48 to 3·50
Soolai 2 & 3rd. do do	R3·40 to 3 45
Coast Calunda	R3·70 to 3·75
Coast Kara	R3·75 to 3·87
Kazala	R3·38 to 3·40
Muttusamba Ordinary	R4·50 to 4·87
Cinnamon per lb No 1 to 4	R00·58 to 00·58½
do do 1 and 2	R00·63
do Chips per candy	R86·25 to 87·50
Coconuts Ordinary per thousand	R35·00 to 38·50
do Selected do	R36·00 to 39·50
Coconut Oil per cwt	R13·87 to 14·00
do do F. O. B. per ton	R318·75 to 320·00
POONAC :—	
Gingelly per ton	R130·60 to 132·50
Coconut Chekku do	R90·00 to 92·00
do Mill (retail) do	R85·00
Cotton Seed per ton	R85·00
Copra per candy	
Kalpitiya do	R44·00 to 45·00
Marawilla do	R42·50 to 44·00
Cart Copra do	R36·00 to 42·00
Satinwood per cubi feet.	R2·00 to 2·25
do Flowered do	R5·00 to 6·00
Halmilla do	R1·90
Palu do	R1·00 to 1·12
Ebony per ton	R75·00 to 175·00
Kitul fibre per cwt	R28·00 to 30·00
Palmyra do do	R8·50 to 15·00
Jaffna Black Cleaned per cwt	R14·00 to 15·00
do mixed do	R12·50 to 13·00
Indian do	R9·00 to 12·50
do Cleaned do	R9·00 to 13·50
Sapanwood per ton	R52·50
Kerosene oil American per cases	R8·25 to 8·50
do bulk Russian per tin	R3·52 to 3·60
do Russian per cases	R7·30 to 7·40
Nux Vomica per cwt	R2·00 to 3·50
Croton Seed per cwt	R23·00 to 28·00
Kapok cleaned f o b per cwt	R24·00
do uncleaned do	R5·50
Plumbago per ton, according to grade: Large lumps	R400·00 to 800·00
Plumbago per ton, according to grade: Ordinary size lumps	R350·00 to 600·00
Plumbago per ton, according to grade: Chips	R200·00 to 450·00
Plumbago per ton, according to grade: Dust	R50·00 to 150·00

COLOMBO PRICE CURRENT.

(*Furnished by the Chamber of Commerce.*)

EXPORTS.

Colombo, 2nd July, 1900.

CARDAMOMS:—

All round parcel, well bleached per lb. R1·50
Do. dull medium do. 1·25
Special assortment, 0 and 1 only do. 1·70
Seeds do. 1·35

CINCHONA BARK:—

Per unit of Sulphate of Quinine 10c—1½ to 3 o/o

CINNAMON:—

Ordinary assortment per lb. 58½c.
Nos. 1 and 2 only per lb. 63c,
Nos. 3 and 4 only per lb. 54c.

CINNAMON CHIPS:—

Per candy of 560 lb R87·50

COCOA:—

Finest estate red; unpicked per cwt R52·00 } scarce.
Medium do do ,, 44·00 }
Bright native, unpicked and undried ,, .. }
Ordinary do do do ,, .. }

COCONUTS—(husked).

Selected per thousand R44·00
Ordinary ,, R34·00
Smalls ,, R27·00

COCONUT CAKE—

Poonac in robins f. o. b. per ton R80 Sellers at R81/25
Do. in bags none.

COCONUT (Desiccated).

Assorted all grades per lb. 13¾c

COCONUT OIL—

Dealers' Oil per cwt. R14·00
Coconut Oil in ordinary packages, f. o. b. per ton R317·50.—Business done.

COFFEE—

Plantation Estate Parchment on the spot per bus. R11·00.—None offering.
Plantation Estate Coffee f.o.b. (ready) per cwt.—R65.00.—None offering.
Native Coffee, f.o.b per cwt. R12·50.—None offering.

CITRONELLA OIL—

Ready do per lb. 65c.

COPRA—

Boat Copra per candy of 560 lb. R45·00
Calpentyn Copra do do do R45·00
Cart do do do R42·00
Estate do do do R45·00

CROTON SEED per cwt R22·00

EBONY—

Sound per ton at Govt. depot R175.—As per last Government Sales, of 15th November.
Inferior R120.—As per last Government sales of 15th November.

FIBRES—

Coconut Bristle No. 1 per cwt R10·50
Do ,, 2 ,, 8·00
Do mattress ,, 1 ,, 3·50
Do ,, 2 ,, 3·00
Coir Yarn, Kogalla ,, 1 to 8 18·00
Do Colombo ,, 1 to 8 16·00
Kitool all sizes 38·00
Palmyrah 16·00

PEPPER—Black per lb 28c.

PLUMBAGO—

Large lumps per ton R800
Ordinary lumps do 700
Chips do 500
Dust do 400
Do (Flying) 150

SAPANWOOD— per ton R52·50

SATINWOOD (ordinary) per cubic ft. R2·40

TEA—	High Grown Average.	Medium Average.	Low Grown Average.
Broken Pekoe and Broken	cts	cts	cts
Orange Pekoe per lb	55	42	32
Orange Pekoe do	55	37	29
Pekoe do	43	33	28
Pekoe Souchong do	35	28	24
Pekoe Fannings do	29	29	23
Broken mixed—dust, &c. per lb	26	20	18

CEYLON EXPORTS AND DISTRIBUTION, 1899-1900.

COUNTRIES	Tea. 1900 lbs.	Tea. 1899 lbs.	Coffee—cwt. Plantation	Coffee—cwt. N'tive	Coffee—cwt. Total.	Cocoa cwts.	C'moms lbs	Cinnamon. Bales lbs.	Cinnamon. Chips. lbs.	Coconut Oil. 1900 cwt	Coconut Oil. 1899 cwts	Copra cwts.	Desiccated Coconut lb.	Poonac cwts.	Coconuts. No.	Plumbago. 1900 cwts.	Plumbago. 1899 cwts.	Fibre.	Ebony cwts.	Sapanwood cwts.
To U K. ..	56419370	50363492	2341	..	2341	13637	192214	347790	133494	112747	49422	12284	3024048	..	5959241	48012	61960	24739	280	4644
,, Austria ..	5902	6816	..	..	..	..	..	1500	19600	3038	1855	13873	37312	...	..	..	14	...	..	1080
,, Belgium ...	2115	8883	54	..	54	206	...	23631	55244	722	404	46244	9 500	32477	...	19114	14687	6373	...	..
,, France ..	108409	69851	..	...	..	59	3407	71488	23484	...	..	15062	3602	201	..	..	609	300	220	..
,, Germany ..	188596	196843	252	..	252	204	59850	218600	304934	5443	401	33410	426091	36865	337444	28941	37320	8319	2045	2880
,, Holland ..	2000	4670	..	..	..	...	...	..	22400	..	..	..	96330	.	25050	912	3126	100	...	...
,, Italy ..	5007	8169	..	..	..	...	519	39509	55216	..	205	1500	..	..	3018	...	..	..	45	...
,, Russia ..	4296699	1822489	88	..	88	..	..	..	...	..	..	36437	..	...	1590	1004	1188	...	..	..
,, Spain ..	15130	11300	..	...	..	...	..	85000	16800	..	..	..	...	...	..	..	...	..	..	..
,, Sweden ..	43218	23746	9	..	9	..	4051	2400	..	...	206	4403	...	..	..	105	208	...	...	...
,, Turkey .	11203	10202	..	..	..	..	1000	...	..	...	..	1	...	..	2000	...	..	..	...	...
India ..	342150	244576	73	4	77	...	33545	..	..	27502	23368	98	..	..	55650	709	280	12	..	23
,, Australia ..	7849385	7404753	1757	..	1757	20	336	4220	11816	83	373	..	299260	..	..	1637	759	1954	27	.
,, America ..	2517826	1441200	85	..	85	361	..	179000	98000	31479	56442	..	781065	...	..	82728	149579	6591	..	..
,, Africa .	82578	134739	...	..	..	..	1456	100	2408	...	..	..	9835	...	757955	..	..	883	..	...
,, China ..	766592	469638	21	...	21	82	1800	40000	...	622	2880	20	83555	...	..	41	100	...	..	...
,, Singapore .	50932	28907	1	..	1	405	..	..	..	...	17812	..	...	..	--	...	..	42	...	..
,, Mauritius ..	700	17420	..	..	..	..	...	...	..	..	..	...	...	..	...	..	...	..	..	...
,, Malta ..	209553	125087	..	...	.	..	..	..	..	...	...	...	..	..	..	..	..	..	..	...
Total export from 1st Jan. to 2nd July 1900	72917366	62382781	4081	4	4085	14974	298178	1013238	743396	181636	153368	163332	4853598	69543	7141948	183203	269830	48313	2617	8627

MARKET RATES FOR OLD AND NEW PRODUCTS.

(*From Lewis & Peat's Fortnightly Prices Current, London, June 13th, 1900.*)

	QUALITY.	QUOTATIONS.
ALOES, Soccotrine cwt.	Fair to fine dry ...	44s a 85s
Zanzibar & Hepatic ,,	Common to good ..	20s a 60s
ARROWROOT (Natal) lb.	Fair to fine ..	5½d a 6¼d
BEES' WAX, cwt.		
Zanzibar & Bombay White ,,	Good to fine	£6 a £7 10s
Zanzibar & Bombay Yellow ,,	Fair ,,	£6 10s a £7 .s 6d
Madagascar ,,	Dark to good palish	£6 10s a £6 17/6
CAMPHOR, China ,,	Fair average quality	130s
Japan ,,	,, ,, ,,	190s
CARDAMOMS, Malabar lb	Clipped, bold, bright, fine	2s 6d a 2s 9d
	Middling, stalky & lean	1s 5d a 1s 7d
Ceylon.—Mysore ,,	Fair to fine plump ..	1s 7d a 3s 9d
	Seeds .	1s 6d a 2s 6d
,, Tellicherry ,,	Good to fine ..	2s 11d a 3s
	Brownish .	2s 6d
,, Long ,,	Shelly to good ..	2s 11d a 3s 6d
,, Mangalore ,,	Med brown to good bold	2s 3d a 3s 6d
CASTOR OIL, Calcutta ,,	1sts and 2nds ..	3¼d a 4¼d
CHILLIES, Zanzibar cwt.	Dull to fine bright ...	37s 6d a 47s 6d
CINCHONA BARK.—lb. Ceylon	Ledgeriana Orig. Stem	3⅜d a 6¾d
	Crown, Renewed	5d a 7d
	Org. Stem	3¾d a 5½d
	Red Org. Stem	4⅜d a 5⅝d
	Renewed	5¾d a 7½d
	Root	3¼d a 4d
CINNAMON, Ceylon 1sts per lb.	Ordinary to fine quill	11d a 1s 8d
2nds	,, ,,	10d a 1s 7d
3rds	,, ,,	9½d a 1s 6d
4ths	,, ,,	8½d a 11½d
Chips	,, ,,	3½d a 9d
CLOVES, Penang lb.	Dull to fine bright bold	5½d a 9d
Amboyna ..	Dull to fine	4½d a 5½d
Zanzibar and Pemba	Good and fine bright	4d
	Common dull to fair	3½d a 3¾d
Stems ..	Fair	1½d
COFFEE Ceylon Plantation ,,	Bold to fine bold colory	100s a 115s
	Middling to fine mid	85s a 95s
	Low mid. and low grown	75s a 82s 6d
	Smalls	55s a 75s
Native	Good ordinary	30s a 70s
Liberian ,,	Small to bold	37s a 45s
COCOA, Ceylon ,,	Bold to fine bold	90s a 100s
	Medium and fair	78s a 87s 6d
	Native	65s a 73s
COLOMBO ROOT ,,	Middling to good	12s a 27s 6d
COIR ROPE, Ceylon ton		nominal
Cochin ,,	Ordinary to fair .	£14 a £19
FIBRE, Brush ,,	Ord. to fine long straight	£16 a £19
Cochin ,,	Ordinary to good clean	£18 a £24
Stuffing ,,	Common to fine	£7 a £9
COIR YARN, Ceylon ,,	Common to superior	£15 a £33
Cochin ,,	.. ,, very fine	£12 a £32
do. ,,	Roping, fair to good	£10 a £14 10s
CROTON SEEDS, sift. cwt.	Dull to fair	38s a 45s
CUTCH ,, ,,	Fair to fine dry	23s a 35s
GINGER, Bengal, rough ,,	Fair	27s
Calicut, Cut A ,,	Good to fine bold	87s 6d a 92s 6d
B & C ,,	Small and medium	35s a 72s 6d
Cochin Rough ,,	Common to fine bold	25s a 33s
	Small and D's	25s a 28s
Japan ,,	Unsplit	2:s a 24s 6d
GUM AMMONIACUM ,,	Sm. blocky to fine clean	20s a 45s
ANIMI, Zanzibar ,,	Picked fine pale in sorts	£10 7s 6d a £20
	Part yellow and mixed	£8 2/6 a £10 10s
	Bean and Pea size ditto	70s a £9 2/6
	Amber and dk. red bold	£5 10s a £7 10s
	Med. & bold glassy sorts	80s a 100s
Madagascar ,,	Fair to good palish ..	£4 8s a £8
	,, ,, red .	£4 5s a £9
ARABIC E. I. & Aden ,,	Ordinary to good pale	35s a 60s
Turkey sorts ,,		67s 6d a 85s
Ghatti ,,	Pickings to fine pale ...	12s 6d a 35s
Kurrachee ,,	Good and fine pale ...	52s 6d a 55s
	Reddish to pale selected	30s a 40s
Madras ,,	Dark to fine pale ...	23s a 35s
ASSAFŒTIDA ,,	Clean fr to gd. almonds	40s a 85s
	Ord. stony and blocky	8s a 25s
KINO ,,	Fine bright	1s a 1s 3d
MYRRH, picked ,,	Fair to fine pale	65s a 75s
Aden sorts ,,	Middling to good	33s a 55s
OLIBANUM, drop ,,	Good to fine white	35s 6d a 50s
	Middling to fair	25s a 35s
pickings ,,	Low to good pale	17s a 20s
siftings ,,	Slightly foul to fine	16s 6d a 18s
INDIARUBBER, Assam lb	Good to fine	2s 10½d a 3s 8d
	Common to foul & mxd.	1s 4d a 2s 6d
Rangoon	Fair to good clean ...	2s 3d a 3s 3d
Borneo	Common to fine	1s a 2s 4d

	QUALITY.	QUOTATIONS.
INDIARUBBER, (Contd)		
Java, Sing. & Penang lb.	Foul to good clean ..	8d a 3s 3d
Mozambique ,,	Good to fine Ball ...	2s 8d a 3s 7d
	Ordinary to fair Ball..	2s a 2s 10¾d
	Low sandy Ball ..	1s 3d a 1s 7d
	Sausage, fair to good .	3s 2d a 3s 7d
	Liver and livery Ball	2s 4d a 3s 1½d
Nyassaland ..	Fair to fine ball	3s 1d a 3s 5d
Madagascar ,,	Fr to fine pinky & white	3s a 3s 3d
	Fair to good black .	2s a 2s 10¾d
	Niggers, low to fine ..	11d a 2s 8d
INDIGO, E.I. ,,	Bengal—	
	Shipping mid to gd violet	3s 9d a 4s 6d
	Consuming mid. to gd.	3s 2d a 3s 8d
	Ordinary to mid.	2s 10d a 3s 1d
	Mid. to good Kurpah	2s 4d a 3s
	Low to ordinary	2s 1d a 2s 3d
	Mid. to good Madras	1s 7d a 2s 6d
MACE, Bombay & Penang per lb.	Pale reddish to fine	2s a 3s
	Ordinary to fair	1s 4d a 1s 11d
	Pickings	1s 4d a 1s 4½d
MYRABOLANES, Madras cwt	Dark to fine pale UG	6s a 7s
	Fair Coast	5s 6d a 6s
Bombay ,,	Jubblepore	4s 3d a 7s
	Bhimlies	4s 9d a 9s 6d
	Rhajpore, &c.	4s 3d a 8s
Bengal ,,	Calcutta	4s 6d a 6s
NUTMEGS— lb.	64's to 57's	2s 4d a 2s 6d
Bombay & Penang ,,	110's to 65's	11¼d a 2s 3d
	160's to 130's	6d a 11d
NUTS, ARECA cwt.	Ordinary to fair fresh	15s a 17s
NUX VOMICA, Bombay per cwt.	Ordinary to middling	4s a 5s 6d
Madras	Fair to good bold fresh	7s a 10s
	Small ordinary and fair	5s 10d
OIL OF ANISEED lb	Fair merchantable	5s 9d
CASSIA ,,	According to analysis	2s 1d a 2s 6d
LEMONGRASS ,,	Good flavour & colour	3d
NUTMEG ,,	Dingy to white	3d a 3½d
CINNAMON ,,	Ordinary to fair sweet	3½d a 1s 6d
CITRONELLE ,,	Bright & good flavour	11d a 1/0¼d
ORCHELLA WEED—cwt.		
Ceylon ,,	Mid. to fine not woody .	10s a 12s 6d
Zanzibar. ,,	Picked clean flat leaf ..	10s a 16s
	,, wiry Mozambique	10s a 11s
PEPPER (Black) lb.		
Alleppee & Tellicherry	Fair to bold heavy ...	6 1-16d a 6⅛
Singapore	Fair	6 3-32d a 6⅛d
Acheen & W. C. Penang	Dull to fine	5¼d a 5¾d
PLUMBAGO, lump cwt.	Fair to fine bright bold	4.s a 45s
	Middling to good small	2.s a 35s
chips ,,	Dull to fine bright ..	10s a 20s
dust ,,	Ordinary to fine bright	4s a 11s
SAFFLOWER ,,	Good to fine pinky .	65s a 75s
	Inferior to fair ..	40s a 60s
SANDAL WOOD—		
Bombay, Logs ton.	Fair to fine flavour ..	£20 a £50
Chips ,,	... ...	5s a £8
Madras, Logs ,,	Fair to good flavour ..	£20 a £50
Chips ,,	Inferior to fine ...	£4 a £8
SAPANWOOD Ceylon ,,	Fair to good ..	£6 a £6 10s
Manila ,,	Rough & rooty to good	£4 10s a £5 15s
Siam ,,	bold smooth ..	£7
SEEDLAC cwt.	Ord. dusty to gd. soluble	53s a 59s
SENNA, Tinnevelly lb	Good to fine bold green	5d a 8d
	Fair middling medium	4d a 5¼d
	Common dark and small	1¼d a 3½d
SHELLS, M. o'PEARL—		
Bombay cwt.	Bold and A's, D's and B's, Small ...	£4 a £5 7s 6d
Mergui ,,	Small to bold ..	£5 15s a £
Mussel ,,	Small to bold ...	18s a £3
TAMARINDS, Calcutta . per cwt.	Mid. to fine bl'k not stony	15s a 16s
Madras	Stony and inferior ..	7s 6d a 11s
TORTOISESHELL—		
Zanzibar & Bombay lb.	Small to bold dark mottle part heavy	19s a 26s 6d
TURMERIC, Bengal cwt.	Fair ...	30s
Madras ,,	Finger fair to fine bold bright	30s a 32s 6d
Do. ,,	Bulbs ..	24s 6d
Cochin ,,	Finger ..	24s
	Bulbs ...	8s
VANILLOES— lb.		
Mauritius .. 1sts	Gd. crysallized 3½ a 9 in	17s 6d a 27s
Bourbon ... 2nds	Foxy & reddish 4½ a 8 ,.	15s a 22s
Seychelles 3rds	Lean and inferior ...	10s a 13s 6d
VERMILION lb.	Fine, pure, bright ...	3s 6d
WAX, Japan, squares cwt	Good white hard ...	33s a 34s

THE

AGRICULTURAL MAGAZINE,

COLOMBO.

Added as a Supplement Monthly to the "TROPICAL AGRICULTURIST."

The following pages include the Contents of the *Agricultural Magazine* for July :—

Vol. XII.] JULY, 1900. [No. 1.

THE AGRICULTURAL COMMISSION AND THE IMPROVEMENT OF NATIVE AGRICULTURE.

THE Report of the Commission appointed to report on the advisability of a Department of Agriculture being established for Ceylon has at last been made public, and it would appear from reviews of it published in the Press, that the general opinion with regard to the document is to the effect that it affords exceedingly interesting reading, containing as it does the views of high Government officials as well as of private gentlemen of standing, but that it has failed to enunciate a practical scheme for dealing with the native agriculture of the country.

In this connection we might refer to another scheme which we understand has been forwarded to Government—the author of which is Mr. E. Elliott, late Government Agent of the Southern Province, who since his retirement has been working as a private agriculturist; and so, having experience (and that varied and extensive) of native agriculture both as an official and an unofficial, is eminently qualified to advise on a question of this nature. We understand that Mr. Elliott deprecates the merging of the interests of what is known as European agriculture with those of Native agriculture, as there is so little in common between the two. Besides, the latter has its own powerful machinery in the Planters Association of Ceylon to protect its own interests, while the Government of the Colony has liberally provided help in the appointment of a number of expert scientists to further protect those interests. Mr. Elliott's scheme provides for a re-orgainsed Central School, of Agriculture, which already exists, and a Central Experimental Farm not far from Colombo, with branch experimental gardens all over the country. His whole scheme is calculated to directly reach the village cultivator, and to this end he recommends that the men to be trained at the Central School should be drawn from the cultivating classes, that the teaching should be in the vernacular, and that the curiculum should be so revised as to entirely serve the requirements of the classes to be reached. The scheme further advises the retention of the mechanism for controlling and working this sub-department of agriculture in the department of Public Instruction, which is already so closely in touch with the village population through its extensive system of vernacular education. We cannot do more than generally indicate the outlines of this excellent scheme, which novel and original though it is, appears to us to be better calculated to effect the object which the Government has so long striven, but unsuccessfully, to attain,

OCCASIONAL NOTES.

The following analysis of Plantain Flour made in Ceylon should prove of interest :—

Moisture	...	11·74	%
Mineral ash ...	...	2·28	,,
Glucose	...	1·02	,,
Crystallizable Sugar	...	·20	,,
Total saccharifiable matter expressed as Glucose		81·96	,,
,, Starch ...		73·76	,,

It is said that the small percentage of sugar should make Plantain Flour a suitable diet for diabetics, and that a food substance entirely free from sugar ought to bring a fortune to the producer. The absurdly low price asked for the Flour (70 to 75 shillings per ton c. i. f.) will, however, prevent anyone from embarking on the Plantain Flour industry.

We note that Sir W. W. Mitchell, writing from Paris, refers to the caju-nut as a possible article of export, as the samples sent to the Ceylon Court have been favourably reported on, while almonds (for which the nuts are a good substitute) are not so plentiful in the market as they used to be. We understand, however, from a correspondent in Paris, that to sell well, caju-nuts must be priced at much less than 12 cents a hundred, as ground nuts from India are so much cheaper. Here, again, the price put upon the article is far too low to encourage the cultivation of the tree (*Anacardium occidentale*) which produces the nut, unless some use could be found for the so-called fruit (swollen peduncle) in the manufacture of spirit, as we believe was once suggested and even tried in Ceylon. The local value of a hundred good caju-nuts varies, according to the season, from 10 to 25 cents, so that there would seem to be a poor chance of making money by selling for less than 12 cents per 100.

We would draw attention to the directions for the prevention of rinderpest issued by the acting Government Veterinary Surgeon, Mr. E. T. Hoole.

Mr. Christian Fernando, a late student of the School of Agriculture and Forestry School, as well as a late member of the Forest Department of Ceylon, left the Island on the 24th June by the S.S. "Secundra" for Natal, whither he has proceeded with a view to finding employment. Mr. Fernando had a creditable career in both the above-named institutions, and with his intelligence and energy should find no difficulty in finding some suitable work to do in South Africa.

A sale of cattle, principally young calves, was held at the Government Dairy on the 8th June, twelve weaned calves together with a cow and calf at foot fetching Rs. 499·63.

The following is the latest analysis of a sample of dairy milk made by the City Analyst on the 6th June:—

Sp. Gravity ...	at 84° F.		1·030
Fat	...	...	4·12
Casein and Sugar		...	8·31
Ash (salts)		...	·72
Total solids...		...	13·15
Water	...	...	86·85
Solids not fat		...	9·03

RAINFALL TAKEN AT THE SCHOOL OF AGRICULTURE DURING THE MONTH OF JUNE, 1900.

1	Friday ..	·07	16	Saturday ..	·05
2	Saturday ..	Nil	17	Sunday ..	1·17
3	Sunday ..	·02	18	Monday ..	·13
4	Monday ..	Nil	19	Tuesday ..	·08
5	Tuesday ..	·42	20	Wednesday	Nil
6	Wednesday	·05	21	Thursday ..	·18
7	Thursday ..	1·07	22	Friday ..	Nil
8	Friday ..	·39	23	Saturday ..	Nil
9	Saturday ..	·27	24	Sunday ..	·04
10	Sunday ..	·12	25	Monday ..	·82
11	Monday ..	1·87	26	Tuesday ..	·01
12	Tuesday ..	·13	27	Wednesday	Nil
13	Wednesday	·32	28	Thursday ..	Nil
14	Thursday ..	·19	29	Friday ..	Nil
15	Friday ..	·20	30	Saturday ..	·17

Total..7·71
Mean.. ·25

Greatest amount of rainfall in any 24 hours on the 11th June, 1·87 inches.

Recorded by Mr. C. DRIEBERG.

PRACTICAL HINTS TO HORSE-OWNERS.

By A. CHINNIAH, C.B.V.C.

CHAPTER II. (*contd.*)—FOOD AND FEEDING.

Horse gram or kollu (*Dolichos biflorus*) is the common horse food in the Madras Presidency. Prof. Church gives the nutrient ratio of kollu as 1: 2·7 and the nutrient co-efficient as 83. The ash contains nearly ⅓ of its weight of phosphoric acid. Kollu seeds, owing to their hardness, are not digested properly when given whole or even crushed. If soaked and given kollu brings on colic, so that it has to be boiled before feeding, and this, of course, is rather an objection, as a great amount of heat is necessary for boiling and the cost of fuel is a consideration. Another drawback is that pebbles are generally found mixed with kollu, and these cannot be easily separated owing to the grain being as heavy as the pebbles. Long continued use of kollu is regarded as objectionable. It is said to cause œdematous swellings which are to be attributed to its highly-nitrogenous character, for œdema may be caused by want of nutrition as well as by over-nutrition.

Black gram or ulundu (*Phaseolus mungo var. radiatus*) is as nutritious as Bengal gram. According to Prof. Church one hundred parts of the unhusked grain contain: water, 10·1; albumenoids, 22·7; starch, 55·8; oil 2·2; fibre, 4·8; and ash 4·4 (of which 1·1 consists of phosphoric acid). It is considered a very 'cooling' diet, and this may be ascribed to its mucilagenous character. Ulundu has to be boiled before it is given to horses.

Green gram or mung (*Phaseolus mungo*) differs little from the last, which is only a variety of it. One hundred parts (according to Church) contain: water, 10·8 to 11·4; albumenoids 22·2 to 23·8; starch, 56·1 to 54·8; oil, 2·7 to 2·0; fibre, 5·8 to 4·2; ash, 4·4 to 3·8. The former figures are for typical green-seeded mung, the latter for typical yellow-seeded. In unhusked

beans the fibre is reduced to 1·1 per cent, all other constituents being proportionately increased. Green gram has also to be given after boiling.

Having considered the chief leguminous horse foods of the East, viz., Bengal gram, horse gram, black gram and green gram, I will now go on to refer to the chief cereal food. Paddy (*Oryza sativa*) which is the staple food of the people in the form of rice or husked paddy, is also largely used for horses—in the unhusked state, mixed with gram. Though some have a prejudice against the use of paddy as a horse food, it forms a good enough diet when given mixed with gram. Paddy is rich in starch but very poor in nitrogenous constituents and fat.

Though rice is the staple food of the people in the East, it is invariably eaten with either meat, ghee, dhall, or some preparation containing coconut milk, for it was found by experience, long before the chemist settled the fact by analysis, that it was wanting in nutritive properties owing to the absence of nitrogenous constituents and fat, so that flesh-forming and fatty substances had to be added to make it a suitable diet. The same necessity has given rise to the use of gram with paddy as a horse food. Doubtless the husk of paddy has like bran a mechanical stimulating effect on the intestines. To counteract this, paddy has to be first ground separately. But even a mixed diet of paddy and gram contains a small proportion of fat, and I am inclined to think that we shall be taught by experience to add a third ingredient to make up the deficiency in fat, say some form of oil-cake.

SOME BIBLE PLANTS OF CEYLON.

II. CINNAMON.

This plant common enough in Ceylon is the *Cinnamomum Zeylanicum* of botanists. In the Old Testament cinnamon is referred to in more than one place as Kinnamon.

It would be useless to describe the plant or the method by which the cinnamon of commerce is prepared from the bark, as both are too well-known even out of Ceylon. It is not generally known, however, that in addition to the oil of cinnamon which is distilled from both bark and leaves, (though the latter is infinitely superior and therefore considerably more expensive than the latter), a fat can also be extracted by boiling the macerated fruit. This substance has been called "cinnamon suet," and was used by the Portuguese to make scented candles for use in their churches. These candles are, however, not manufactured in the Island in the present day, and when samples of cinnamon suet were required by the late Dr. Trimen for the Imperial Institute collection, they had to be specially made by Mr. J. F. Drieberg, cinnamon planter of Jaela, Ekele. Cinnamon has in the past always been highly valued as a spice and a perfume, and is said to have been one of the principal spices employed in the manufacture of precious ointment for the tabernacle (Exodus xxx. 22-25). Solomon speaks of it as one of the frankincense plants: "Calamus, cinnamon, with all trees of frankincense (Songs of Solomon iv. 14). Its use as a perfume is referred to in Proverbs vii. 17: "I have, perfumed my bed with myrrh, aloes, and cinnamon." The merchandise of it is noticed in an account of the destruction of the Apocalyptic Babylon: "Cinnamon, and odours, and ointments, and frankincense (Revelations xviii. 3).

Besides the true cinnamon should be noted another species known as Cassia, and mentioned in the Bible under the names of Kiddah. It was an ingredient of the holy ointment already referred to, and is referred to by Ezekiel among the merchandise of Tyre (Ezekiel xxvii. 19). This plant is understood to be *Cinnamomum Cassia*, the bark of which is generally known as Cassia bark. It is thought to be inferior to true cinnamon, being coarser and more pungent, with a certain amount of bitterness. The leaves when chewed taste of cinnamon, but those of the true cinnamon plants have more the flavour of Cloves. Cassia oil and Cassia buds appear to be produced by the same tree, which grows both in India and China.

THE TRINIDAD STOCK FARM.

The report of the Manager of the Trinidad Government Farm for 1899, which has been kindly sent to us, speaks of the year having proved an exceptionally trying one for the management of a large herd on a limited area of land, aggravated by the drying up of the pastures and the prevalence of hot winds. As a result the yield of milk was lower and the cost of upkeep of the animals higher. The milch herd consists of 100 animals: 114,737 quarts of milch were produced as against 130,977 quarts last year, that is, 16,140 quarts less from about the same number of cows, 52. The following breeds are kept on the Farm:—Pure zebu, Sinhalese, Red Poll cross and Guernsey cross, besides what is described as the general milch herd. The particular breed of Indian cattle referred to as Zebu (a general term for the humped cattle of India) is not mentioned. The following reference is made to the Sinhalese cattle which were taken over from Ceylon some time ago:—

"A small herd of Sinhalese cattle were introduced from Ceylon. These miniature animals would be of excellent service on cocoa estates, as they could pass freely under the trees when crooking. They are very strong, quick and hardy; for cane farmers they could take the place of mules, do the same work, and cost a third less, in fact, prove the poor man's beast. There has been no increase as yet in the herd."

With the high opinion entertained of the utility of Sinhalese cattle, it would, we think, be as well to introduce at least another pair into Trinidad with a view to increasing the stock. (In this connection we might add that the latest demand for Sinhalese cattle came from Austria for the Emperor's Zoological Gardens. The animals were selected for the local agents by Veterinary Surgeon Chinniah.)

The profit during the year's working of the Trinidad Farm is given as 5·6 per cent on the capital outlay. We should mention that besides the dairy a horse-breeding and poultry farm is also maintained.

The following table giving the analysis of the morning and evening milk produced on the farm is worthy of note for purposes of comparison, and as showing how the composition and specific gravity of milk varies in different seasons :—

	Morning.			Evening.		
	Fat.	Solids—not Fat.	S.G.	Fat.	Solids—not Fat.	S.G.
February	4·25	8·97	1028	4·23	8·51	1027
March	3·57	8·74	1028	4·66	8·91	1027
April	3·16	8·97	1030	4·64	8·75	1026
May	4·15	8·81	1027	4·72	8·78	1026
June	3·99	8·87	1029	4·20	8·91	1028
July	3·10	9·02	1030	4·04	9·05	1029
August	3·69	9·38	1029	4·20	9·24	1029
September	4·10	9·76	1029	4·	9·09	1029
October	3·91	9·65	1030	4·88	11·29	1027
November	3·91	9·33	1029	4·22	9·52	1029
December	3·65	9·40	1029	4·93	9·33	1026

THE DYEING OF MATERIALS USED FOR KALUTARA BASKET MAKING.

The following communication addressed by the Secretary of the local Paris Exhibition Committee to the representative of the Ceylon Government at Paris is worth reproducing as dealing with the development of an industry, the products of which are becoming very popular. The Assistant Government Agent of Kalutara and Mrs. Vigors are deserving of the gratitude of the basket-makers of Kalutara for the interest they are taking in the improvement of the industry associated with their district :—

"I am instructed by the Chairman of the local Paris Exhibition Committee to forward a bundle of dried leaves of the wild date (*Phœnix zeylanica*) used for basket-making in the Kalutara district, and to ask you to be good enough to make ènquiries as to the possibility of fixing permanent colours in such material. I would refer to the many artistic shades used in dyeing straw for hats and bonnets in Europe, and how little, if at all, the colour is affected by light, whereas the imported dyes now used in dyeing the material for local baskets and mats fade rapidly. In the correspondence with reference to the use of dyes carried on by the Assistant Government Agent, Kalutara, with his headmen, it is stated that though imported dyes (as sold in the village bazaars) produce more brilliant colours, these colours are not so durable as those produced by native methods of dyeing. From enquiries made the following appear to be the indigenous dye stuffs used by the natives for dyeing the materials for making baskets, mats, and hats.

1. Pathangi, from the wood of *Caesalpinia sapan* (red).

2. Marithondi, from the fruits of *Lawsonia alba* (orange yellow).

3. Welikaha from the leaves of *Memecylon capitellatum* (yellow).

A black colour is induced by first dyeing red with No. 1, then burying the dyed material in mud for a period, next steeping it in a mixture of water and the ash of burnt plantain leaves (*Musa sapientum*), and finally washing and dyeing! I enclose specimens of the leaves dyed according to the native method as well as by means of the imported dyes referred to. The people are taking to the latter owing to the simpler treatment they involve, as compared with the comparatively laborious native processes. It is surmised by the Assistant Government Agent of Kalutara that the imported bazaar dyes now used are of an inferior description, and that it would be possible to introduce into the colony superior dyes such as are used for colouring straws in Europe. As the basket industry of the Kalutara district is one of some importance, the Chairman will be glad to hear from you with reference to the desired improvement in the matter of dyeing the material used."

PREVENTION OF RINDERPEST.

Rules to be observed when the Disease has broken out in or near the District.

The following directions for the prevention and suppression of rinderpest are specially drawn up for the benefit of owners of large cattle establishments on estates :—

1. The method for the prevention of rinderpest can be summed up in the words "Keep out all sources of infection and contagion."

2. Cart bulls might bring the contagion with them and introduce the disease. They should therefore be housed separately, and as far away as possible from the dairy and other cattle on the estate.

3. Carters are careless about the safety of their masters' cattle, and they often house the cart bulls in infected galas on the way regardless of consequences. Every effort should be made to prevent this by putting up extra temporary galas for healthy cattle and exercising strict supervision and control in the matter. Infected galas should be closed for healthy cattle and notices put up to the effect.

4. If cart bulls have of necessity to frequent infected localities, it would be advisable to have them inoculated with glycerinated bile and keep them strictly isolated and under observation for ten days, after which period they may be used in carts.

5. Inoculated cattle and those that have previously recovered from an attack of rinderpest, although they may be proof to the disease themselves, may yet convey it to other cattle on their return from an infected area. So they should be housed separately on their return.

6. Men, dogs, crows—in fact, anything that has been in contact with rinderpest cattle, their discharges or excreta—should be considered sources of infection. The carting of manure from an infected locality to the estate should also be avoided.

7. Ten to fifteen drops of Jeyes' fluid may be given daily to healthy cattle with poonac water or conjee as an aid to prevention. After giving it for three or four days the Jeyes' fluid should be discontinued for a couple of days and then

given again for another four days, and so on. A due allowance of salt should be given to all the cattle and their bowels kept in good order.

8. If rinderpest breaks out on the estate, an attempt should at once be made to stamp it out by immediately destroying the first one or two cases and thoroughly disinfecting the place. As fever is one of the earliest symptoms, the temperature of the remaining cattle should be taken every day, and any showing a temperature of over 103° F. should be removed and isolated at once, before they spread the infection to their neighbours. All the cattle on the estate may now be inoculated.

9. If the disease threatens to spread further, of if the outbreak on the estate has somewhat advanced, the inoculation of all the cattle becomes a positive necessity. But it would not be necessary to have *all* the cattle (including dairy cattle, stud bulls, &c.) inoculated unless there is rinderpest on the estate itself or in its immediate vicinity.

10. Inoculation will be done by the officers of the Government Veterinary Department gratis or at a very moderate expense to the owners, when application is made in case of actual necessity.

11. Rinderpest carcases should be buried six feet deep, and as far away as possible from human habitation, public roads, water-courses, cattle sheds, and grazing grounds. Carcases should not be dragged along the ground, but should be lifted up by coolies suspended on strong sticks. The quartering of carcases before burial should not be allowed, as well as the consumption of rinderpest meat by coolies. These are sure means of spreading the disease.

12. Disinfectants (such as a one or two per cent. solution of carbolic acid or Jeyes' fluid) should be freely used when rinderpest is prevalent, and anything known or suspected to be infected (including coolies who have buried the carcases) should be thoroughly disinfected. The fumes of burning sulphur are very useful for disinfecting the air of cattle sheds, &c. Fire is one of the best and cheapest disinfectants, and any infected matter that can be burned or even charred, such as litter, should be so treated.

E. T. HOOLE,
Acting Govt. Veteriuary Surgeon.

A REPORT ON EDIBLE OILS.

One of the latest numbers of the *Agricultural Ledger Series* treats of Indian Edible Oils, and contains a report by Prof. Dunstane, F.R.S., Director of the Scientific Department of the Imperial Institute.

Prof. Duustane prefaces his report with the following remarks :—Among the subjects awaiting investigation by the Scientific Department at the beginning of the present year was that of Indian Edible Oils, samples of which have been collected in India during the last two years under the supervision of the Reporter on Economic Products to the Government of India and despatched by him to the Imperial Institute. As the subject is an important one, and the entire staff of the Department was, and is now, occupied with other investigations, most of them on Indian subjects, I decided to arrange for these oils to be examined in my laboratory at St. Thomas' Hospital by two young assistants specially competent to engage in such work, Dr. H. W. Crossley, M.Sc. Ph.D., and Mr. H. R. LeSueur, B.Sc. The Government Grant Committee of the Royal Society were good enough to make a small grant from the Government Fund for Scientific Research to defray the expenses connected with these experiments.

The plan of investigation which seemed to me likely to be serviceable was to examine in the first instance the chief physical and chemical characters of each oil, so as to furnish a basis for their comparison with well-known and largely-used edible oils, and thus to render it possible to obtain a report on the commercial value of the Indian samples. After this preliminary survey of the entire collection it might prove to be worth while to examine more minutely the chemistry of those oils which appeared to present features of novelty. The preliminary examination of the oils has now been completed by Messrs. Crossley and LeSueur, who will present an account of their results to the Society of Chemical Industry, which will subsequently be printed in the journal of the Society. By this means it is hoped that the attention of oil brokers and merchants will be directed to the variety of excellent oils belonging to almost every class which are obtainable in India, and that the experimental data will enable us to obtain a trustworthy opinion as to commercial uses and value. I ought to say that when the oils were first received, I made several attempts to ascertain their market value but entirely without success, as no scientific data existed as to their composition and quality.

Then follows a list of the oils which were examined.

The reference to coconut oil is naturally of primary interest to us. The samples were drawn from Malabar, Bengal and Bombay, and the following results of the examination of the chemical and physical characters were noted in the three samples :—

	Malabar.	Bengal.	Bombay
Specific gravity	·9030	·9040	·9042
Acid value as K.O.H	35·21	11·84	9·95
„ as Oleic acid	8·86	2·98	2·50
Saponification value	25·82	255·6	255·5
Iodine value	8·54	8·41	8·25
Reichert-Meissel value	6·71	6·79	6·65
Insoluble fatty acids	—	82·35	—
Melting point	23·5	24·5	25·0

The percentage yield of oil from Bengal and Bombay are given as 52·3 and 57·1. The constants, says Prof. Dunstance, of these Indian species agree with those on record for this oil, except the Reichert-Meissel value which is markedly higher,

The following reference to the composition and properties of coconut oil (and Ceylon coconut oil in particular) occur in Cochran's Manual of Chemical Analysis :—

The soap made from it is soluble to a larger extent in saline and alkaline water than most other kinds of soap, hence it is used for the manufac-

ture of marine soaps. It does not make a good lubricant as it contains free acids. In addition to the other uses enumerated, it has been in considerable quantities in recent years for the manufacture of a butter substitute, known in commerce as coconut butter. [A sample of coconut butter can be seen at our office. The latest developement in connection with coconut produce, is the manufacture of a substance—entirely by mechanical means—from the fresh coconut, and known as "Edible coconut oil." A correspondent from the Paris Exhibition mentions that Mr. G. G. Warr (who was for some time in Ceylon) is expected there with sample packets of the "edible oil" for distribution to the trade, with the help of Sir W. W. Mitchell of the Ceylon Court.—ED. *A.M.*]

Coconut oil has a very complex constitution. The following fatty acids have been found in it:—Lauric acid, $C_{12}H_{24}O_2$; Myristic acid, $C_{14}H_{28}O_2$; acids having the composition $C_{11}H_{22}O_2$; and $C_{12}H_{26}O$; also Palmatic acid, $C_{16}H_{32}O_2$; and stearic acid, $C_{18}H_{36}O_2$.

When coconut oil has solidified, which it does at the comparatively high temperature of 78° F., it can be readily separated by pressure into a solid body, stearine, and a liquid called oleine. The former substance is used in the manufacture of candles, the latter, after being purified with sulphuric acid, is used as a burning oil.

A sample of ordinary coconut oil from the bazaar had a specific gravity ·9207 at 85° F. (29·4° C.) A sample of Hultsdorf pure king coconut oil at the same temperature had a specific gravity of ·9186. The specific gravity of coconut oil given by European writers is for the temperature 212°F. (100° C.) ·868.

CLASSIFICATION OF FIBRES.

[DR. DODGE.]

D. BRUSH FIBRES.

1. *Brushes manufactured from prepared Fibre.*

a. For soft brushes (substitutes for animal bristles, such as Tampico).

b. For hard brushes (ex. palmetto, palmyra, kitul, &c.)

2. *Brooms and Whisks.*

a. Grass-like fibres (broom root, broom corn, &c.)

b. Bass fibres, also for coarse brushes and sweepers (monkey bass, piassaba, &c.).

3. *Very Coarse Brushes and Brooms.*

Materials used in street sweeping, &c. Usually twigs and splints.

E. PLAITING AND ROUGH WEAVING FIBRES.

1. *Used in articles for attire as Hats, Sandals, &c.*

a. Straw plaits. From wheat, rye, barley, and rice straw (ex. the commercial Tuscan and Japanese braids).

b. Plaits from split leaves, chiefly palms and allied forms of vegetation. (Ex. the celebrated Panama hats, from the finely-divided leaves of *Carludovica palmata*).

c. Plaits from various materials used entire and without preparation. (Ex. basts and thin woods used in millinery trimmings, &c. Chinese sandals from rushes).

2. *Mats and Matting; also Thatch Materials.*

a. The commercial mattings from eastern countries.

b. Sleeping mats and other forms of mats or matting. Screens, &c., made by natives for their own use.

c. Thatch or other covering or protection from the elements, made of tree basts, palm leaves, grasses, &c.

3. *Basketry.*

a. Manufactures from woody fibre. (Commercial examples: Osier and splint baskets; the same forms produced by Indians and including also manufactures from sumac and other twigs, roots of spruce, &c.)

b. From the whole or split leaves or stems of endogens, or from any rigid fibrous material, including also the culms of grasses. (Chiefly Indian or native manufactures from Yucca leaves, palm leaves, reeds, grasses, &c., used individually or in combinations).

4. *Miscellaneous Manufactures.*

Willow ware in various forms, chair bottoms from splints, rushes, &c.

F. STUFFING OR UPHOLSTERY.

a. Wadding, batting, &c., usually, commercially prepared lint cotton.

b. Feather substitutes. For filling cushions, pillows, &c., cotton; seed hairs or silk cotton, such as kapok, Asclepias down, &c.; tomentum from the surface of leaves, stems and leaf buds of plants; other similar soft fibrous material.

c. Mattress and furniture filling. The tow or waste of prepared fibre, unprepared bast; straw and grasses; substitutes for curled hair, as Spanish moss, crin végétal, maize husks, &c.

2. *Caulking.*

a. Filling the seams in vessels, &c., oakum from various fibres.

b. Filling the seams in casks, barrels, &c., leaves of reeds and giant grasses.

3. *Stiffening.*

In the manufacture of "staff" for building purposes, and as substitutes for cow's hair in plaster. New Zealand flax; palmetto fibre.

4. *Packing.*

a. In bulk heads, &c. (as in armoured vessels). Ex. coir, cellulose of corn pith, &c. In machinery, as the valves of steam engines, various soft fibres.

b. For protection, usually in transportation; various fibres and soft grasses; marine weeds, excelsior; also stuffing and upholstery materials generally.

G. PAPER MATERIALS.

1. *Textile Papers.*

a. The spinning fibres in the raw state. The secondary qualities, or the waste, from spinning mills, which may be used for paper stock, including tow, jute butts, Manilla rope, &c.

b. Cotton or flax fibre that has already been spun and woven, but which as rags find use as a paper material.

2. Bast Papers.

This includes Japanese papers from soft basts, such as the paper mulberry (Broussonetia) or species of the genus Edgeworthia.

3. Palm Papers.

From the fibrous material of palms and similar monocotyledonous plants. Ex. Palmetto and Yucca papers.

4. Bamboo and Grass Papers.

This includes all paper material from gramiuaceous plants, including the bamboos, esparto, maize, and true grasses.

5. Woodpulp and Cellulose.

The wood of spruce, poplar and similar "paper-pulp" woods, prepared by various chemical and mechanical processes.

It should be noted that an absolute economic classification of uses with relation to species is impossible, as the same fibre may be used in several ways. Manilla hemp is manufactured into rope, and old Manilla rope into Manilla paper. Cotton is used for fabrics, as a netting fibre, for cordage, in upholstery, and in paper. In fact there are very few fibres which are not made into paper, the amount of cellulose they contain and the cost of the processes by which they are converted being the main considerations. The same plant may also yield two kinds of fibres, as lint cotton covering the seed, and cotton bast, stripped from the stalk.

[*Conclusion.*]

CEYLON CATTLE AS DAIRY STOCK.

No one will deny that the native cattle of Ceylon have hopelessly degenerated especially as milking stock if indeed they even excelled as such.

A cow may be said to be a milk-making machine, and every cow can be made to yield a quantity of milk commensurate with the care and feeding bestowed on her. There are different organs in the body, and their development depends greatly on the attention paid to them. So if attention is paid to the milk-secreting organ of the cow, within the course of a few generations, Ceylon cattle may also be made to supply fairly good dairy stock. I remember a lady upcountry remarking that English and Australian calves very soon take to hand feeding, and that it takes a long time to teach the country calf to feed in this way. The only reason which I could assign on being questioned as to the cause, was that the difficulty was due to hereditary defect, and any improvement or change must not be looked forward to till the next generation, and that, too, provided the greatest attention be given to the improvement of the habit complained of. The villagers do not realize the essential conditions required for producing milk cattle. I will try to explain some of these :—

1. *Feeding.*—The milk producing animal requires highly albuminous and fatty foods, that is to say, it needs foods which supply the ingredients required to produce milk, after having supplied all bodily wants. Such food as native cattle pick up generally only suffices to maintain animal heat, and to some extent to repair the wear and tear of the tissues, and leaves no balance for laying on fat or for producing milk.

2. *Temperament.*—Native cattle are more or less wild animals. The reason of this is that they are not properly fed and tended; they are, on the other hand, roughly handled by man and allowed to roam about in search for food exposed to all sorts of risks, and are frequently disturbed and frightened by other beasts. Hence they grow timid. Such spare energy as they possess is expended in unnecessary excitement and exercise.

The cow has first got to be made docile before we can expect to make a milking animal of her. The promiscuous mixing of heifers, cows in milk and in calf, young stock and bull of all ages, is most reprehensible, and such a state of things makes the possibility of breeding out good milch cows an utter impossibility. First and foremost, there should be a selection of bulls made, all weedy males being castrated. Next the herd should as far as possible be divided into different lots when at grass, one lot consisting of cows in milk, another of cows in calf, &c. It is only in this way that a beginning could be made of making the future native milch cow a docile creature, for an excitable animal will never settle down to milk secretion. A. CHINNIAH.

THE POONA DAIRY.

(*From the last Report.*)

The profit for the year was R2,470. There were 194 animals in the herd at the end of the year as compared with 187 at the beginning. Fifty animals, chiefly young he-buffaloes and old cows, were sold. The herd was healthy throughout the year, and the present strength is about the full limit that can be conveniently maintained. In the cattle-breeding and dairy operations certain definite aims are kept in view:—

(i.) To breed up to a higher standard certain of the breeds of India as regards their milking capacity, and to maintain, or, if possible, improve the usefulness of the same breeds for draft purposes.

(ii.) To supply pure milk and other dairy products to the sick in hospital, and, as far as possible, to the public in Poona at rates which are kept so high that our operations do not interfere with private enterprise.

(iii.) To shew by precept and example the advantages of cleanliness and improved methods and appliances in dairy management, and the necessity of careful management and feeding for dairy cattle.

(iv.) To teach dairy methods, the manipulation of dairy machinery and cattle management to those who attend at the farm for the purpose of being taught. Mere onlookers are not admitted to these privileges. Men who come to learn must also work.

It may be definitely said that progress in all the directions indicated above has been made from year to year, and there has been no backsliding in the year under report.

Young cows bred on the farm are proving themselves excellent milkers. The sales of milk and butter could be greatly increased, but with present facilities any increase is impossible. A number of soldiers were sent for instruction in order to be able to manage dairies and milk cattle in other cantonments. The department can take credit for initiating in India an enterprise which has had a material influence on agricultural prosperity on the improvement of of Indian butter, and its export trade.

The services of farm bulls are given gratis to all healthy cows.

AN AGRICULTURAL DEPARTMENT FOR CEYLON.

REPORT OF COMMISSIONERS.*

In obedience to the Commission to us directed, we have inquired into the advisability of establishing a Department of Agriculture.

We advise the establishment of such a Department, and we recommend the appointment of a Director of Agriculture.

The officer selected for this appointment should have local experience and knowledge of local conditions and acquaintance with the people. His office should rank in the First Class, and he should be a Member of the Executive and Legislative Councils.

The duty of the Director would be to advise the Government in matters concerning the improvement of agriculture and the extension of cultivation. It would be within the scope of his labours to direct inquiries into the suitability of soils for certain products; to cause inquiries to be made as to the origin and causes of diseases affecting useful plants, and as to the best means of arresting and destroying such diseases; to cause measures to be adopted for the improvement of the various descriptions of products now cultivated, either by the introduction of new seed or by the application of special manures or otherwise; to take measures for the establishment of Schools of Agriculture; and to suggest action for the improvement of native cattle and horses.

He should be assisted by an Advisory Board, of which he should be President, analogous in its constitution to the Central Board of Irrigation. Boards similar to the Provincial Irrigation Boards, and having the same relation to the Central Board, should be established at the provincial centres. The establishment of these Boards would enlist local influence and local headmen in the work of the Department.

There should be attached to the Department of Agriculture the Director of the Botanic Gardens, a Mycologist, Agricultural Chemist, Entomologist and Veterinary Surgeon.

The intimate connection between Agriculture and Irrigation renders it, in the opinion of a majority of the Commission, advisable that the Irrigation Department should be combined with the Department of Agriculture.

It has been suggested that the Departments of the Conservator of Forests and of the Director of the Botanic Gardens, and the future Department of Mines (including the Geological Survey), should be combined with the Department of Agriculture, in so far that the business of these Departments with the Government should go through the Director of Agriculture, who would be adviser of the Government in relation to the affairs of these Departments, and relieve the Governor and the Colonial Secretary of minor administrative details relating to them: but the majority of the Commission doubt the expediency of giving effect to this suggestion.

To the Department of Agriculture would be assigned the preparation of statistical information relating to agriculture and the areas of cultivation.

The immediate expenditure necessary to carry out the suggestions of the Commission would include the salaries of the Director and of his expert advisers and the funds required for the payment of the clerical establishment. A lump sum should also be provided to enable the Director to give immediate effect to approved proposals for the improvement of agriculture.

As the Department extends its operations and gives evidence of its usefulness further expenditure will be required; and the Commission desires to record its opinion that it will be futile to adopt its suggestions as to the establishment of a Department without recognition on the part of Government of its duty to provide the funds to give effect to its proposals. Its initial work must be largely experimental, and its expenditure cannot be justly submitted to the test of its pecuniary productiveness.

A. C. Lawrie	S. D. Bandaranaike*
L. F. Lee	P. Coomaraswamy*
A. De A. Seneviratne*	F. G. A. Lane
J. N. Campbell	J. H. Starey
A. F. Broun*	J. C. Willis.*

October 31st, 1899.

* See their remarks.

We dissent from the above report on the following points:—

The appointment of a Director of Agriculture is in our opinion unnecessary. The duties detailed in paragraph 4 of the report should be exercised by a Board of Agriculture analogous in its constitution to the Central Irrigation Board, and having a Member of the Executive Council as its President. Until the Government is in a position to judge of the working of the new Department the expense of a paid Director need not be incurred.

The interests of the paddy cultivation will, we think, suffer by combining the Irrigation Department with the Department of Agriculture. The object of the Irrigation Department is the irrigation and cultivation of paddy lands, and that Department is worked under the immediate and personal supervision and control of His Excellency the Governor. The withdrawal of the Governor's personal supervision from that Department cannot but be prejudicial to paddy cultivation, and the proposal to combine that Department with another, which deals with not only larger and more varied interests, but such as at times may be conflicting, cannot meet with the approval of the paddy cultivator. There is also the possibility, however remote, that such combination may lead to the use of irrigation funds for purposes other than irrigation.

A. de A. Seneviratna | S. D. Bandarnayake

P. Coomaraswamy.

I agree with the above gentlemen's views as regards the proposed appointment of a Director of Agriculture.—A. F. BROUN.

I agree with the views above expressed as to the proposal to create a Department with a Director. I think a Board should first be tried, with, if possible, His Excellency the Governor as Chairman. In this event I should not object to a combined Board of Agriculture and irrigation (with Sub-Committees for each Branch); otherwise I agree with the views of Mr. Seneviratna that these two departments of work should be kept separate.—JOHN C. WILLIS.

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* Commissioners appointed by H.E. the Governor:—

Mr. Justice A. C. Lawrie, Chairman; Hons. F. R. Ellis, L. F. Lee, A. de A. Seneviratne, and John N. Campbell; and Messrs. A. F. Broun, S. D. Bandaranaike, Maha Mudaliyar, P. Coomaraswamy, John Ferguson, F. G. A. Lane, J. H. Starey, J. C. Willis, and C. Drieberg (Secretary).

MR. JOHN FERGUSON.

The views of Mr. John Ferguson will be found in the following Draft Report drawn up by him at the request of the Chairman. prior to his degarture for England in August, 1899.—

The Commission appointed by His Excellency the Governor to inquire into and report on the advisability ot establishing a Department of Agriculture have the honor to submit the following report with appended papers.

1. The Commission have only held four meetings, but careful consideration has been given by the memoers to a series of papers on the subject of an Agricultural Department, drawn up especiallyby the Director of the Botanic Gardens at an early stage of the p·oceedings and in addition the opinions of the several Government Agents and their Assistants have been invited. and obtained, of certain specified questions bearing on the subject of inquiry.

2. The Commission would direct attention to the several papers and answers appended to their report, and would confess to a considerable diversity of opinion, both among the members and Revenue Officers, on the advisability of establishing a Department of Agricultnre.

3. It seems clear to the majority of the Commission that any step taken at this time should be primarily with a view to the improvement and expansion of native agriculture, and that whatever be the directing, supervising, and advising body, the Revenue Officers of Provinces and Districts should be the medium for reaching and influencing the people.

4. That the great defect hitherto attending experiments for the improvement of native agriculture has been—in the words of the Government Agent for the Northern Province—" the absence of continuity of work at any one subject." He tells us one Provincial or District Officer's fad " is irrigation ; another's, gardening; another's, stock improvement or horses ; another's paddy or coconuts ; and so on. Owing to the frequent changes in Administration (Provincial), each man s scheme, good in itself, is gradually dropped by his successor, and so the changes are rung to little or no ultimate benefit. It was the discovery of this as regards Irrigation which led to the formation of the Irrigation Boards, with the best results."

5. The Commission have no doubt that all branches of Agriculture in Ceylon—those of grain and palm-growing, equally with the tea, cacao and other industries of the planter—stand in need of scientific aid and advice from time to time, and that this can best be afforded by the Director of the Botanic Gardens and a staff of scientists at Peradeniya.

6. The Commission have also no doubt as to the value of experimental gardens or model farms being opened, with the full concurrence of the Government Agents and under their control, in every Province and ultimately in every Revenue District of the Island ; and they consider it desirable that an Agri-Horticultural Show, suited to the importance or necessity of the Province or District, should be held once a year either at the capital of the Province or in a district town.

7. The Commission further tbink the Agricultural School should be placed on a new basis and that its transfer to the neighbourhood of Kandy, as recommended by the Director of the Botanic Gardens, is desirable.

8. In order to secure uniformity in controlling and directing improvements in different branches of Agriculture in the various Provinces, and to consider the special needs of particular industries from time to time, the Commission would recommend the establishment of a Central Board of Agriculture, with a member of the Executive Council as President, with one or two Government Agents and the Director of the Botanic Gardens as official members, and with two or more unofficial members while all Government Agents and their Assistants should be corresponding members. This Board would receive reports of all improvements in existing branches of Agriculture of experiments with new products, of inquiries into diseases or other enemies of plants, &c., and would furnish Government once a year with a full and comparative report as to the work it the different Provinces, while advising from timn to time on any agricultural question that mighe arise. To such Board might be left for consideration and report the question if further scientists should be temporarily or permanently attached to Peradeniya at this time ; also the details and working out of several other improvements suggested in the Memoranda, Notes, or other papers of the Director of the Gardens, the Government Agents and other writers, which will befound in the Appendix to this report.

9. As the agricultural resources and prosperity of the Colony develop, tbe Commission would like to see a special Agricultural Department gradually evolved, the Board being presided over by the most efficient of the Government Agents (who should also be a member of the Executive Council), with Provincial and District Boards to correspond with the central institution. But at the outset, the Commission think a start may well be made with one Central Board (utilizing existing means), and having for its main object the maintenance of continuity of attention by the Revenue Officers and Headmen to any well-considered schemes for improvement in cereal or garden cultivation, or in live stock, which have once been fairly started in their Provinces or districts, while also taking cognizance of the great planting industries, of diseases affecting them, or of proposals of for their improvement, or for adding to the list new products deserving of practical attention.

10. Finally, the Commission would recommend that some encouragement be held out to young Civilian Cadets to qualify for their duties by a course of agricultural study in Europe before coming to Ceylon.